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Translator's Copy

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(Moskva, Gos. Izd-vo Sel'skokhoziaistvennoi Lit-ry,)
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Translated from the Russian by
S. N. Monson

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(From the History of Russian Agronomy)

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CHAPTER I

The Stalin Plan for an Offensive Against Drought

The historical significance of the decree of the Council of Ministers of the USSR and the Central Committee of the VKP(b) of October 20, 1948. The significance of the grass-field system of agriculture in controlling drought. The system of large government tree shelter belts and the development of shelter forest plantings on the fields of collective and state farms. Afforestation and stabilization of sands. Introduction and utilization of grass-field crop rotations. System of field and forage crop rotations. System for the proper cultivation of soil and the fertilization of plants. Adoption of irrigation in the conditions of Central-Russian elevations. Adoption of estuary irrigation. Bottom land and the problems concerning their rational usage. The mechanization of the field-sheltering tree planting and the system of government tree-shelter stations. First summaries on the fulfilling of the historical decisions of the government and the Party, dated October 20, 1948.

The decrees of the Council of Ministers of the USSR and the Central Committee of the VKP(b) of October 20, 1948, concerning the "Plan for

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field-sheltering tree plantings, the introduction of grass-field crop rotations, the construction of ponds and reservoirs to provide high and stable harvests in steppe-and forest-steppe regions of the European USSR" -constitute a tremendously challenging program for the Soviet people, opening new paths towards the further ascent of a socialist agricultural economy. The great plan, adopted upon the initiative of comrade Stalin, intended as a wide-spread offensive against drought and the transformation of the nature of original agricultural regions of our country, reflects the aim and desires of the Soviet people who do not admit any unsurmountable difficulties in their strives towards a set goal. All Soviet people see in this decree new and vivid illustrations of Stalins's concern, as well as those of our bolshevist party and the Soviet government for the future development of our agriculture, the improvement of the living standards of the laboring classes, and the strengthening of the power of our country. The bringing to life of this majestic program will lead to the greater strengthening of the economic power of the Soviet state, will ensure the abundance of agricultural products, and speed the forward movement of our land towards communism.

No capitalist country in the world has ever set itself such a goal as to conquer drought, nor could it have done so. According to Marx, "Every progress in capitalist agriculture is a progress of not alone the art in

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robbing the working man, but also, along with it, of the art of robbing the soil". It is well known what the results of such robbing of the soil have led to in present day America where enormous agricultural areas were transformed into unfertile deserts.

The Lenin analysis of the regularity of the capitalist development, with respect to agriculture, has been confirmed. In one decade alone, that of 1935 - 1945, the total number of farmers in the USA has been reduced almost by one million, at the cost of the ruthless ruin of the small farmer. Along with this, the growth of the large capitalist agricultural economies have created a condition where one third of all farm economies produce about 80 percent of the entire gross agricultural output. Even the official statistics of the USA are unable to hide the tragedy of the small American farmers who live in dire poverty and are compelled, for the most part, to wander around in search of work and bread.

The forcing-out of the small farmer and the ruin and impoverishment of the middle-class farmers have proceeded at an even faster pace since the second World War. Land real estate and enormous wealth have concentrated more and more in the hands of the large capitalist farmers and various monopolies (combines). The contemporary situation in USA agriculture offers another vivid testimony of the anti-people character of the capitalist system which inevitably leads to ruin, and the torturous impoverishment and starvation

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of not alone the proletariat but also the overwhelming majority of all agricultural workers.

At a time when the capitalist world is being torn by the severest class conflicts and the economies of the USA and those of the "Marshallized" countries of Europe are unable to overcome the deepest contradictions of the post-war period, the Soviet socialist system of economy, freed from class antagonisms and crises, conquers over new heights, and steadily increases its tempo towards a forward victorious movement.

There are not and cannot be any obstacles to a steadfast agricultural progress in the Soviet Union where the most important law is that of a planned system of economy.

The historical decisions of the Soviet government and our party indicate that the frequently repeated droughts and dry winds in steppe and forest-steppe regions of the European USSR lead to a considerable loss in agriculture. These steppe and forest-steppe regions have, however, since ancient times represented the largest agricultural zone of the country. Agriculture hardly knows of any other regions that could compare with them in the wealth and fertility of their soils. But in those very areas of wealthiest and most fertile soils there are frequently inadequate harvests that lead from time to time to enormous losses in agriculture. The severe droughts that periodically occur destroy the sowings and lay bare the fields. In the last

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65 years alone drought has struck the fields of the Povolzhie over 20 times, those of the Voronezh, Rostov, Voroshilovgrad, and Stalinski districts more than 15 times, the Bashkir, Tartar, Mordavia ASSR, the Kursk, Kharkov, Dnepropetrovsk, Kherson, and Nikolaev districts - more than 10 times. Science proves, nevertheless, and the practical records of the leading state and collective farms, as well as the MTS (Machine Tractor Stations) confirm this, - that in a properly directed (organized) agriculture these very areas should possess the capacity of producing high and stable harvests of agricultural crops from year to year. "It is necessary for this purpose, - state the decrees of the Council of Ministers of the USSR and the Central Committee of the VKP(b), - for all collective and state farms of the steppe- and forest steppe regions to introduce, beginning 1949, a planned, widely spread system of agricultural methods designed to raise agricultural levels and to benefit from the long experience of our scientific-research institutes and leading collective and state farms, as well as the teachings of the most prominent Russian agronomists V. V. Dokuchaev, P. A. Kostichev, V. R. Williams, known as the GRASS-FIELD SYSTEM in agriculture.....

As stated in the decrees, the following methods are included in the grass-field system of agriculture:

a) the planting of shelter forest zones on watersheds, the borders of fields of crop rotations, on the slopes of ravines, the banks of rivers and lakes,

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around ponds and reservoirs, as well as the afforestation and stabilization of sands.

b) the proper organization of the territory by introducing grass field and forest crop rotations, and the rationally conducted utilization of the soil.

c) the proper system of cultivating the soil, the care of plantings, and most of all, the wide adoption of black fallows, plowing, and the disking of stubbles.

g) the proper system of adopting organic and mineral fertilizers.

d) the sowing with selected seeds suited to local conditions and of high yielding varieties.

e) the development of irrigation on the "base", the utilization of the water of local drainage (run-off, flow) by the construction of ponds and reservoirs.

This system of measures, state the decrees, will act as the most reliable weapon for controlling droughts, will aid the rise of the fertility of the soils, the obtaining of high and stable harvests, the discontinuance of the wash-out and blow-out of soils, the stabilization of sands, and the most accurate utilization of land. In addition, this system will offer the opportunity to develop a varied economy with a correct correlation of field growing, livestock raising, and other branches, and will ensure a considerable growth of commodities.

The Party and the Soviet government have earlier already given much attention to the introduction of the agronomic measures advocated by

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Dokuchaev, Kostichev and Williams into the practice of socialist agriculture. Never in the history of our agriculture, however, has an attempt been made to establish a control of drought on such a scale, or such daring and decisive measures been undertaken for the radical transformation of the agriculture of the most important regions of our country, as were determined in the above decrees of the Council of Ministers of the USSR and the CC of the VKP(B).

The decrees list the detailed data that characterizes the achievements of the Dokuchaev Scientific-Research Institute of the Central Black Earth Belt (formerly the Kamennostepnaya (Stone-Steppe) Experiment Station), where the agricultural system of grass-fields is conducted most consistently.

The history of the Stone-Steppe is most instructive.

Upon the initiative of V. V. Dokucheev and under his leadership a special expedition was organized in 1892 into the Russia steppe zone. Its task was to prove - experimentally - the possibility of obtaining high and stable harvests in the drought regions. Three experimental sections were selected for this purpose: Veliko-Anadolski (Great Anadolski), located between the Dnepr and Donets; Starobelski, located in the watershed between the Donets and the Don; and the Kamennostepnoi (Stone-steppe), located in the watershed between the three tributaries of the Don: Oseredoi, Bituig, and Khopr. The execution of the Dokuchaev plan of work began with the organization of meteo-

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rological observations, the study and description of the soil, the composition of soil maps, the study of the steppe flora and fauna, and the search for methods of regulating the water economy. The expedition completed its work in 1899. The Stone-steppe forestry was organized, (subsequently reorganized in 1911), into the Kamennosteppe agricultural experiment station. Dokuchaev's experiments had a tremendous scientific and practical significance for the explanation of the causes of poor harvests that frequently reoccurred in the Russian steppe zones, as well as for the measures to create a stable agriculture in drought steppes.

The Soviet government has highly evaluated the great economic significance of the experimental work performed in the Stone-steppe area. It has provided the experiment station with tractors, combines and other improved machinery, has assigned large amounts of money for the expansion of the scientific-research work and the full execution of Dokuchaev's ideas. In 1946 the Kamenno-steppe Experiment Station was reorganized into the Scientific-Research Institute of Agriculture of the Central Black Earth Belt, named after professor V. V. Dokuchaev. Scientific workers who achieved the greatest success were awarded the Stalin prize.

The land area of the Institute consists of two sections: field and vegetable. In the field section there are 1,413 hectares under crop rotation, of which 400 hectares (or 28.3 percent) are bordered with grown forest plantings, with a predominance of interstrip of 25 hectare cells; 575 hectares

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(or 40.6 percent) are under protection of grown and young forest strips; and 438 hectares (or 31.1 percent) are located in the open steppe, without forest strips, and are intended for the comparative study of the conduct of agricultural crops in the open steppe, while under the protection of forest strips.

240 hectares are under forest strips at the Dokuchaev Institute, and altogether with the adjoining borders and platforms used for hay cutting and selection sowings, there are about 300 hectares. The ravines and valleys of the territory of the Institute have 10 ponds in all. Of old forest strips, of over 30 years of age, there are about 50 hectares in the Kamennaya steppe. According to the width of the strips these old forest plantings are divided in the following manner:

from 13 to 24 m.....	10.7 hectares.....	19 strips
from 30 to 34 m.....	3.5 hectares.....	5 strips
from 38 to 60 m.....	15.0 hectares.....	10 strips
from 60 to 70 m.....	20.0 hectares.....	9 strips

The width of the forest strips, next to ravines, is 40 to 60 m.

The widest forest strips of 60-80 m. are situated on the most elevated spots, that gradually narrow down to the slopes.

The work of the Institute established that a considerable improvement of the water balance in drought steppes and the obtaining of high and stable yields during any weather - may be expected only under conditions of creating

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and preserving maintenance of a good, lumpy soil structure, the carrying out of large agro-forest-meliorative works on a vast scale, and the installation of ponds, reservoirs in ravines, and valleys in the steppes. The introduction of this series of measures will consistently improve the fertility of the soil, assist the rapid storing in it of humus and nitrogen, will improve the physical characteristics of the soil and its structure. It has been experimentally proved that in the 2-4 years period since the time of sowings in the field of cereal and leguminous perennial grasses, a virgin soil was created of splendid soil structure of small clods, which under ordinary circumstances could be produced only in a 20-30 year old waste land.

The system of wide tree shelter-and pre-ravine forest belts, grass field crop rotations and the "zaluzhenie" of slopes has practically stopped the processes of ravine formation and the flat wash-out of the soil on the fields of the Institute. The drain of melted and rain waters was drastically reduced. If in the open steppe on a non-structural soil up to 70 percent of the water flows into ravines (valleys) and rivers, the areas of structural afforested soil will absorb a considerable part of the rainfall and aid the increase of yields of agricultural crops.

Many elements of the micro-climate changed in the Stone Steppe substantially chiefly under the influence of the tree shelter belts, the afforestation of watersheds, ravines, valleys, and the installation of a system of ponds. The rapidity of the wind on the fields among forest belts was di-

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minished, for instance, by 30-40 percent, and the precipitation reduced in a similar degree. The relative humidity of the air was 3-5 percent higher than in the open steppe.

With the gradual introduction of the grass field system of agriculture at the Institute, the yield of cereal crops has steadily increased. The average increase in yield throughout the territory of productive sowings is shown on table I.

TABLE I

INCREASE IN YIELD

(In centners per hectare)

Years	Average in cereal and leguminous crops	Including:		
		Winter crops	Summer cereals	Cereals and Legumes
1934 - 1936	11.1	13.3	9.7	10.3
1937 - 1939	14.4	18.8	13.6	10.5
1940 - 1942	15.9	20.5	14.6	12.9
1943 - 1945	20.3	21.4	21.1	15.3

The influence of tree shelter belts upon the increase of yields of agricultural crops is reflected in the following data: (Table II)

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TABLE II

AVERAGE YIELD

(in centners per hectare)

Crop	On Fields among forest belts	In Open Steppe	Increase in Yield (in centners per 1 hectare
Winter Wheat	22.5	17.9	4.6
Summer Wheat in layers	15.8	13.3	2.5
Summer Wheat in rotation layer	15.6	14.3	1.2
Oats	20.8	17.0	3.8
Sunflower...	17.1	14.5	2.6
Hay of perennial grasses of first year	49.6	36.2	13.4

The drought of 1946 put the work of the Institute to a severe test. In severity and scale of distribution the drought of 1946 had no equal in the preceding 60 years. The enormous significance of the complex of measures undertaken under the grass field agricultural system showed off particularly. The following yields were obtained on the fields of grass-field crop rotations, bordered by field-shelter forest belts, where summer crops were sowed on well cultivated plow land, and winter crops - on black, well cultivated fallows:

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TABLE III

YIELDS OF FIELD CROPS IN THE STORE STEPPE IN 1946

CROP	In centners per hectare	CROP	In centners per hectare
Winter wheat	16.52	Oats	15.75
Winter rye	14.97	Millet	16.43
Summer wheat	10.62	Peas	8.20

Using the same high grade agricultural methods, but planted in the open steppe, the yield of winter wheat, produced in 1946 was 7.6 smaller, of summer wheat - 3 centners less per hectare.

The yield of stable and the ever increasing harvests of agricultural crops from large productive areas confirm the fact that the agricultural system in drought steppes, established on the basis of the teachings of V. V. Dokuchaev, P. A. Kostichev, A. A. Izmailski, and V. R. Williams, does away with the elemental character of harvests and assures their progressive growth.

The results obtained by an entire group of collective and state farms which applied the grass field system of agriculture are no less interesting. The grain state farm "Giant" of the Rostov district, for instance, which applied the grass field crop rotations and which grew over 600 hectares of field shelter forest plantings, obtains high and stable harvests from

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year to year. At this state farm the yield of winter wheat in the fields protected by forest belts represents an average of over 25 c. per hectare. Equally significant achievements were obtained in this respect by many other collective farms. The example of the collective farms of the Salski region of the Rostov district, which raised on their fields 2,600 hectares of field shelter forest belts, indicates that in accepting the grass field crop rotation and applying high level agricultural methods, they gained significant results with regard to yields, and raised in the drought year of 1946 a regional average in cereal crops of 13.6 c., - the more advanced collective farms of this region - even 18 c. per hectare. The collective farms of the Dominski MTS (Stalingrad district): "Bolshevist Banner", named after Kaganovitch, another named after Chapaev, the "Dominski", etc. - have successfully introduced ~~the~~ grass field crop rotations and created field shelter forest belts; as a result they obtained yields from 3-5 c. higher in cereal crops than did the neighboring collective farms which did not possess any forest plantings and did not introduce ~~the~~ grass field crop rotations.

The Council of Ministers of the USSR and the Central Committee of the VKP(b) indicate in their decrees of October 20, 1948, that "...the collective and state farms of the steppe and forest steppe regions, having accumulated experience in controlling harvests, and using advanced agricultural methods, have every opportunity to make rapid strides in the next few years in furthering the development of agriculture and animal husbandry. At present all

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essential conditions are available for introducing the grass field system of agriculture in the steppe and forest steppe regions, which will substantially increase the yields of agricultural crops".

With regard to the protection of high and stable yields in steppe and forest steppe regions of the European USSR, the decrees of the Council of Ministers and the Central Committee of the Party allot the most important role to the creation of a system of vast government tree shelter belts and the development of shelter forest plantings on the fields of collective and state farms.

Throughout the years of the Stalin Five Year Plans the establishment of field shelter forest belts in collective and state farms was widely practiced. Many collective farms have successfully adopted the technique of field shelter forest plantings and have, because of forest belts, obtained significant increases in their yields. According to the figures of the All-Union Scientific-Research Institute of Agro-Forest-melioration, the collective farms of the steppe regions of the south and south-east of the European USSR, Siberia, and the Northern Kazakhstan - have during the decade (1931-1941) planted about 850,000 hectares of shelter belt plantings, of which 452,000 hectares consisted of field shelter forest belts. The greatest distribution of the field shelter forest planting was accomplished in the Ukraine, which at the beginning of 1941 possessed 259,000 hectares of tree

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shelter plantings. The forest plantings were made by 42,000 collective farms and serviced by 2,421 MTS (machine tractor stations). In the years of the World War II the shelter forest plantings suffered serious losses. In many regions the plantings were wantonly destroyed by the invaders, there was a lack of the necessary care in the regions, and new plantings were practically discontinued. As a result, the post-war period presented an unfavorable situation with regard to field shelter forest plantings. The situation was somewhat aggravated by the lack of appreciation on the part of several workers of soil organizations, on the role of shelter forest plantings in controlling drought. The decisions of the February Plenum of the Central Committee VKP(b), stated the problem, however, clearly and unequivocally, stressing the necessity for a radical reconstruction and improvement of the agro-forest-meliorative work.

The decision of the Council of Ministers and the TSK VKP(b) of October 20, 1948 has radically changed the situation with regard to field shelter forest plantings. It has changed every conception of possible tempo and scale in forest-meliorative works in our country. Within the shortest-historically-space of time, estimated in two or three five year periods, the face of the earth over a tremendous area had to be transformed; a territory which equals in size that of many European countries, taken together. Within this territory there are about 80,000 collective farms, 1000 state farms, of a total soil area of over 127 million hectares.

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Russian scientists were aware long ago of the enormous influence forests exert upon the accumulation and preservation of moisture in the soil. The moisture in the soil evaporates 6-1/2 times faster outside of a forest than within it. The role played by forests in the protection from winds is also very great. Field shelter forest belts reduce the speed of the wind and consequently slow up the process of the evaporation of moisture in the inter-belt regions, ensuring thereby a more productive utilization of the moisture by agricultural plants. Under winter conditions the forest belts aid the uniform deposit of the snow layer in inter-belt spaces and interfere with the blowing off of the snow into the ravines and valleys. The practice of many years established the immense significance of forest belts for the protection of fields from dry winds and black storms. The black storms which swept over the southern and south-eastern regions of the Ukraine in March, April and December of 1946, did not injure sowings that were protected by forest belts, while plantings sowed in the open, unprotected fields were in individual regions damaged from 60 to 80 percent.

As a result of the creation of favorable conditions in the inter-belt spaces by forest belts, the yields of agricultural crops were much higher here than in the open steppe. This difference in yields was demonstrated in an eloquent manner in the drought year of 1946, as may be seen from Table IV (p. 16).

Shelter tree plantings in areas exposed to erosion retain the snow, reduce the surface flow of melted and rain waters, preserve the soil from

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washout, aid its accumulation of moisture.

On the experiment field of agro-forest melioration, of the Ukrainian Institute in the Ponornitski region, Chernigov district, the wash-out of the soil in 1937 during one rainfall only reached 21 t. per hectare, and in 1940, during the spring flow, the wash-out of the soil on the same field reached 48 t. per hectare. The effect the wash-out of the soil has upon the yield of agricultural crops is seen from the data obtained from the collective farm "Paris Commune", of the Verchne-Dneprovski region, Dnepropetrovski district, for 1937.

TABLE IV

YIELDS IN SHELTER FOREST BELTS AND IN THE OPEN STEPPE

(in centners per hectare)

Bases	Crop	Yield in shelter forest belts	Yield in the Open Steppe	Additional Yield
Timashevski Base VNIALMI, Kuibishev district	Winter wheat	7.0	2.6	4.4
	Summer wheat	13.7	12.1	1.6
	Oats	13.0	9.7	3.3
Bogdinski Base VNIALMI, Astrakhan district	Millet	17.5	4.46	13.05
	Water-melons	114.0	42.0	72.0
Collective Farm "Bolshevist Banner" Kovo-Annenski region, Stalingrad district	Winter rye	16.5	11.0	5.5
	Winter wheat	29.0	14.0	15.0

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TABLE V

YIELD OF WHEAT IN THE COLLECTIVE FARM "PARIS COMMUNE"

Crop	On unwashed-out soils		On weakly washed-out soils		On average washed-out soils		Strongly washed-out soils	
	in c/h	in %	in c/h	in %	in c/h	in %	in c/h	in %
Winter wheat	21.2	100	8.0	38	3.6	17	1.6	8
Summer wheat	12.8	100	3.6	28	2.4	19	0.8	6

At the Mariupolski agro-forest meliorative experiment station the yield of winter wheat in 1946 on inter-belt fields consisted of 23.5 c. per hectare, while on the fields of the neighboring "Bolshevik", in open steppe on good fallows, the yield of winter wheat did not exceed 16 c. per h.

The destruction of forests and the formation of open spaces on unstructural soils of fields led to the entire supply of water from snow and of 75 percent of the waters of summer rainfalls being dispersed over the surface of the fields, creating immense inundations of rivers and floods. Melted waters flowing down the slopes create fearful destruction. According to V. R. Williams, in the USA the rains and melted waters wash off one and a half times more elements of plant nutrition from non-structural soils than the entire world's chemical industry is able to produce in the form of fer-

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tilizers, and 21 times more than are carried away by cultivated plants with the harvest. Under the capitalist system of economy there is no opportunity to control this evil since the presence of private property with regard to soil and the anarchy of production preclude the introduction of forest-meliorative and other measures on a government scale.

The possibilities are altogether different in our country. The afforestation of steppe regions in the USSR, the introduction of field shelter forest belts are imparted the significance of government measures which are compulsory for all land users, without exception. According to the decisions of the Council of Ministers and Central Committee of the Party the afforestation of the steppes and the creation of field shelter forest belts are viewed as a measure which should be carried through not alone in isolated cases by individual collective and state farms, but which should involve enormous regions of land.

V. R. Williams wrote in his time: "In organizing the belt forest growth, it is of the utmost importance to preserve the principle of a planned inclusion of entire natural districts and regions but not, for instance, only the area of one collective farm. The afforested territory of one collective farm is only an islet which will forever be swept by the uncontrolled waves of an ocean of dry air. The significance of such local solution of the problem in afforestation is very low and does not warrant the expenditures involved. It is imperative that such work - within the limits of a region

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or district - be subordinated to one plan and strictly bound to the construction work of laying out fields for proper grass field crop rotations." The decision of the government views the problem exactly in the same manner.

The decree of the Council of Ministers provides the creation between 1950 and 1965 of eight largest size government tree shelter belts, extending 5,320 km over an area of forest plantings, the 117.9 thousand hectares.

Among the first created will be the government tree shelter belt to extend from Saratov to Astrachan, along both banks of the river Volga, of a width of 100 m. and 900 km. in length. This will spread further in the direction of Penza - Ekaterinovka - Veshenskaya - Kamensk on the Northern Donets, on the watershed of the rivers Khopra and Medveditsa, Kalitva and Berezovaia, and will consist of three belts, of 60 m. in width each, having a distance of 300 m. between the belts and a length of 600 km. In the direction of Kamishin - Stalingrad, the tree shelter belt will be in the watershed of the rivers Volga and Ilovlia, and will consist of three belts, of 60 m in width each, a distance between the belts of 300 m. and a length of 170 km. Similar tree shelter belts - in four rows - will be planted in the direction of Chapaev - Vladimirovka, of 580 km in length; Stalingrad - Stepnoi - Cherkessk - 570 km in length; Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea, consisting of six rows - distance between the belts of 100-200 m. and a length of 1,080 km.; Voronezh - Rostov -on-the -Don, along both banks of

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the river Don, length - 920 km; and finally, the government tree shelter belt along both banks of the river Severnii Donets, from the town of Belgorod to the river Don, of a width of 30 m and a length of 500 km. The work of erecting of the above government tree shelter belts was assigned to the Department of Forestry of the USSR, the project to begin on a wide scale already in 1949.

Execution of the plan on such scale will eliminate the harmful influence of dry winds upon harvests in our country, will protect the fertile soils of the Povolzhie from wind erosion, the Ukraine, the Northern Caucasus, and the central-black earth districts; it will improve the water system and climate of these areas, make the latter regions yield high and stable harvests of cereal and other agricultural crops.

It is noteworthy that the decree clearly designates the tree-shrub genera which must be used in planting forest belts. The principal place is assigned to the oak, as the most stable and long-lived genus. The oak is the hardiest among all other genera for steppe forest planting and also possesses valuable wood. Among the rest of the genera, the following were to be distributed: the maple, the elm, the birch, and in some forest belts - also fruit trees - the apple, pear, apricot, the steppe cherry; among shrubs - the yellow acacia, the hazelnut, honeysuckle, etc. The dreams of I. V. Lichurin were coming true; he wrote in his address to the delegates of XVI

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Party Convention: "In the nearest future the fields of the black earth zone will take on another aspect. Instead of scattered peasant forest belts there will be rich fields throughout the collective farms, bordered by gardens. Thus will be created field-gardens. The most speedy and energetic work has to be done for the propagation of good varieties of fruit trees adapted to local conditions."

It is to be observed that one of the faults of the pre-revolutionary steppe forest growth was exactly in the poor selection of woody genera. The plan intends to obtain for each zone the genera suitable for the particular conditions of the area, as indicated by accumulated scientific and practical data. Therein will lie a considerable measure of success. The forest belts will be layed out in three stories, to ensure the stability of the plantings. To the oak, the genus of the first story, will be added the corresponding genera of the second story, which will prevent the oak from growing into branches and assist the strengthening of its growth. The third story will be composed of shrubs, that will serve as soil sheltering underbrush, and particularly aid the growth of the forest plantings. The greatest consideration was to be given the planting of trees and shrubs conforming to government regulations, since no errors could be corrected later on.

The technique used in the process of successful forest plantings will carry much significance. The history of forest growing tells how expensive

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those plantings were in former years. In organizing the Great-Anadol forestry, the dendrologist Graf in 1843 used the garden method of planting. Prior to the planting four deep plowings were made and in the prepared holes, of a depth and width of 12 vershki (corresp. to inches), 5-6 year old trees were planted, from an estimate of 2,400 trees per dessiatina. The cost of such a dessiatina of tree plantings amounted to about 700 rubles even in using serf labor. In later years the methods were improved, but only slowly.

The experiments of the individual advanced forestries were not summarized or propagandized. In Nokuchaev's times already, the best dendrologists succeeded in adopting considerably simplified methods of steppe forest plantings and reduced the cost of it considerably, as well as that of the forest-meliorative work. According to the data provided by the famous Russian dendrologist prof. Turski, who worked in the Miusski tree nursery, where the methods in forest culture were reduced to the simplest level, the cost of growing trees per dessiatina did not exceed 49 rubles already and consisted of the following operations:

COST OF WORK IN PLANTING A FOREST ON ONE DESSIATINA
AT THE MIUSSKI FORESTRY (1 dess. = 2.70 acres)

Plowing and harrowing	10 rubles 00 kop.
Planting	7 " 00 "
Spring care of fall plantings	50 "

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Weeding in the first year (5 times)	12.	rubles	70 kop.
Weeding in the second year(3 times)	11	"	72 "
Weeding in the third year (2 times)	6	"	80 "
Total:	48	r.	72 kop.

In the fourth year the crowns of the young trees were already joining and they no longer feared the wild grass vegetation.

At present, in bringing to life the plan of field-shelter forest plantings, on a scale unheard of in the history of agriculture, it is of the utmost importance to simplify and to reduce the cost of methods of forest growing. The works of T. D. Lysenko deserve particular attention in this connection since they permit to solve the most important problems in a new manner. The sowings of tree belts by nest method based on the data of the Michurin agrobiology present enormous opportunities in steppe forest growing. The Departments of Forest Economy, Agriculture and State Farms of the USSR, have been assigned the task (in accordance with the decrees of the Council of Ministers and the CC of VKP(b)), of insuring in 1949 the use of the "nest method" on the experimental fields of tree belts, the fields of scientific and experimental institutions, and the forest economies of steppe and forest steppe regions. The All-Union Lenin Academy of Agricultural Sciences has equally been authorized to work out the necessary directions within a two months period for these plantings.

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Along with the creating of tree shelter belts, the Department of Forest Economy is to adopt measures for the preservation of all valuable forest "bodies" ("massive") in steppe and forest steppe regions: the Khipov Forest, the Khrenovski Pine Grove, the Borisoglebski Forest "body", the Tulski Forest Reserves, the Shatilov Forest, the Black Forest, the Great-Nadolskii Forest body, the Buzuluk Pine Grove, the Lenin and Manychski Forest Economies of the Rostov district, the watersheds of forect bodies of the Kuibishev and Ulianovski districts, the Boyarskaia "dacha", the Feodosiiski Forestry, the Peshtaugorski Forest body, etc. In these forests, as well as in many other forest bodies that are distributed along the watersheds of rivers, a strict regulation with regard to felling has been introduced, which will ensure the preservation and improvement of these forests.

In addition to the organization of government tree shelter belts, by government decree, a plan of tremendous scope is contemplated with respect to the erection of tree shelter plantings on the fields of collective and state farms which will, according to the government statement - "be one of the most important conditions of ensuring the high yield of agricultural crops, designed to reduce the harmful influence of dry winds upon harvests, to improve the water system, and eliminate the process of destruction of the soil cover (wash-out and blow-out of soils) in the steppe-and forest steppe regions of the European USSR".

The government plan of creating tree shelter plantings in 1949 - 1950 on the fields of collective and state farms involves an area of 5,709,000

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hectares, of which 3,592,500 hectares will be erected by the collective farms at their own expense, with the aid of the government. A considerable part of the work of creating tree shelter plantings is assigned to the state farms. Here the Department of State Farms has set a plan of 580,000 hectares, i.e. about 10 percent of the entire plan of forest plantings.

The collective farms of the Povolzhie (Kuibishev, Saratov, Stalingrad districts) have been authorized to carry through particularly large plantings, i.e. 628,000 hectares, while the state farms in these districts were required to plant a total of 174,000 hectares, the results of these plantings intended to be particularly effective. Equally large forest plantings were contemplated for the regions of the Ukrainian SSR (756,500 hectares) and the Northern Caucasus.

Simultaneously with the expanded work of forest plantings in the Povolzhie, the banks of the Ural, and the watersheds of other rivers, the Department of Forest Economy is required to fulfill an additional program in forest planting in the amount of 1,536,500 hectares, of which - 960,500 hectares are to be planted on the property of the government forest fund lands in less inhabited regions and on collective farm lands - with the participation of collective farm workers - on 576,000 hectares. This will involve large works in the afforestation of ravines, valleys and watersheds, work on government forest fund property, etc. The Department of Forest Economy is ordered to complete by 1965 the afforestation of all ravines and valleys on collec-

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tive farms in forest and forest-steppe regions of the European USSR, which will be of enormous significance, not alone for the accumulation and preservation of moisture but also in controlling soil erosion. It is known that soil erosion in capitalist countries, the USA in particular, is considered a national calamity. The more farsighted policicians foretold the extent of the disaster that will result from soil erosion. President Roosevelt, for instance, pointed out that such chaotic methods of exploiting soils, as carried on in the USA, will eventually transform the area of the agricultural regions of the country into a Sahara desert. The wanton exploitation of land in the USA has led to an enormous loss of land wealth. Close to 80 million hectares of plow land are destroyed or damaged in the USA, one half of these lands having considerably deteriorated as a result of the loss of the fertility of the upper layers of soils, while one fourth of these lands - up to 20 million hectares, has become unused land, and one quarter of this is already close to this stage.

The application of this system of measures with regard to forest plantings in our country is intended to proceed according to a strictly correlated plan. By the decrees of the Council of Ministers and the Party, the corresponding Departments, as well as the leading Soviet and party organs are required to work out a single plan of afforestation for districts, regions, and republics and to assign a specific task in afforestation to every region, collective and state farm and forest economy, along with providing instructions on the gathering of seeds and the growing of seed material.

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As is the case in government forest belts, the oak is also suggested here as the principal genus for planting. The government, however, also indicates that in order to create long-lived and stable tree shelter plantings, effective from an early age, perennial, as well as quickly growing species of trees are to be included in the plantings, and that the species should be assembled in conformance with local climatic soil conditions.

Of considerable importance is the planting of close to 10-15 percent of fruit trees and shrubs in these areas, which will make these plantings particularly valuable. In the Krasnodar region, the Crimea and the southern districts of the Ukraine SSR, in locations favorable to the growth of the eucalyptus tree, this interesting plant is to be planted along the banks of irrigation canals, around ponds and watersheds, as well as in the field tree shelter belts, a circumstance which in the light of the latest decree of the government, concerning the distribution of citrus and eucalyptus trees in the southern regions of the European USSR, assumes particular significance. One of the greatest errors committed in former years was the planting of field tree shelter belts in the shape of narrow belts (strips) which are unable to protect the soil from washing-out. The present decision of the Council of Ministers of the USSR and the CC of the VKP(b) strictly regulates the width of forest belts in conformance with the purpose of the plantings and local natural environment. The forest belts intended for the protection of fields from dry winds in valleys are supposed to be of 10-20 m.

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in width; the forest belts, distributed along slopes of a width of 20-60 m., etc.

The work of forest plantings at the collective and state farms represents a new enterprise which demands special knowledge and practice, as well as persistence and attention. The decree suggests that the collective farms form special units of collective laborers for work on forest planting, while in order to assure the success of the growth of the tree shelter belts and the seed material at the nurseries, an additional pay has been set as a particular reward for better care. The additional wage has been established for 10-15 labor days for each hectare of forest plantings, based on the acclimatization of no less than 80-85 percent of plantings in the first year in the area assigned to a unit. An additional monetary pay compensation has been set for the growing of seed material in the nurseries of collective farms; other measures intend to stimulate interest in the work and its improvement. The government provides an enormous amount of material and technical assistance to collective and state farms in this connection. A considerable amount of necessary equipment to aid the mechanization of tree shelter plantings and the care of seeded material has been distributed on locations, groups of specialists in this field have been directed to the farms, special schools, forest economies, etc., have been established for the purpose. The work of the MTS (machine tractor stations)

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will be of immeasurable aid, since they are directed to also include into the plans of the work - instructions on the preparation of soil, planting, seeding of trees, and the care of forest plantings.

It was further stipulated in the decree that in order to increase the responsibility in this direction the plan of agricultural work in regions, state and collective farms will be considered fulfilled only upon the condition that the plan of afforestation has also been completed, along with the work of seed planting and its care in nurseries.

In order to provide for the afforestation of areas of such vast size, it was realized that an enormous amount of seed material will be required. With this in mind a network of special government forest nurseries were established at the - Departments of Forest Economy, Agriculture, and State Farms, respectively, as well as a network of tree nurseries at collective farms. The plan envisages the growth of tree seedlings, shrub and fruit tree varieties in the following quantities:

TABLE VI

PLAN OF GROWING SEED MATERIAL (in millions of items)

Nurseries	1949	1950	1951-1955
Dept. of Forest Economy of USSR	1900	2550	14,477
Dept. of Agriculture	634	1015	8,082
Collective Farms	246	377	2,686
Dept. of State Farms	86	219	1.460

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Ed. 2, rev. Moskva, Gos. Izd-vo Selkhoz. Lit-ry, 1949.
262 p. 33.31 K844

Translated from the Russian by
S. N. Monson

Chapter VII

MICHURIN AGROBIOLOGY AND THE PROBLEM OF

CONTROLLING DROUGHT, (pp. 226-242)

....It follows from Michurin's theory that the change in heredity is usually the result of the development of the organism under conditions of an external environment which in some form or other do not satisfy the natural demands of a given organic form.

Lysenko stresses that changes in living conditions force a change in the very type of development of vegetative and animal organisms. The change in type of development represents therefore the first cause for the change in heredity.

All organisms that are unable to adjust to altered living conditions do not survive and do not leave any progeny. Organisms and their nature are consequently created in the process of development.

The chromosome theory of heredity, states Lysenko, recognizes the possibility of obtaining hybrids only by sexual method. It rejects the possibility of obtaining vegetative hybrids since it does not recognize the specific influence of living conditions upon the nature of plants. Michurin, however, not only admitted the possibility of the existence of vegetative hybrids but also developed the MENTOR SYSTEM.

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Vegetative hybrids serve as a convincing proof of the correction of the Michurin understanding of heredity and stand at the same time as an unsurmountable obstacle for the Mendelists-Morganists. Everyone realizes that a wilding and a graft were not able to exchange the chromosomes of the nucleus of cells and that if hereditary traits were nevertheless transmitted from the wilding to the graft and vice versa, plastic substances produced by the wilding and graft, as well as by the chromosomes, possess evidently racial traits and a definite heredity as do other parts of a living body.

The Michurin doctrine, extended in the remarkable works of T. D. Lysenko, caused darwinism to change from the passive explanation of the expediency of living nature to the active transformation of nature in the interests of man, and to the study of ways of development for increasing the expediency of the vegetative and animal world in order to satisfy humanity.

In pursuing this path, Michurin and his followers succeeded and continue to succeed in producing the necessary forms of plants and animals. The theoretical force and outstanding practical results of Michurin's work can be explained primarily by the fact that his research and practical activity were founded upon the firm foundation of dialectical materialism.

Taking as a premise the principle of dialectical materialism which claims that everything living originated from non-living matter, Michurin stressed the decisive influence of environment upon the development of an organism. Using as a starting point the fact that the changes in the

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heredity of a given organism were the results of the changes that had taken place in the living body itself under the influence of existing conditions, Michurin proved not only theoretically, but in wide practical experiments, that man in utilizing every means of active pressure upon nature is capable of producing new forms and fixing them into hereditary patterns.

The history of the production of new varieties in plants does not possess any brighter and remarkable examples than those with which Michurin enriched humanity.

All his theoretical statements were confirmed by an enormous amount of experimental data. Unheard of possibilities of influencing the nature of vegetative organisms in planned order were opened up by him. Michurin also established the scientific foundations of hybridization. The mentor method worked out by him (the method of training plants) represents an outstanding scientific achievement and since it represents the most delicate method of controlling the development of the necessary qualities in young hybrids, it permits the experimentor to transform the properties and qualities of young hybrids and to train them in the required direction.

The Michurin trend in biology reflects an active approach to nature. "We cannot afford to expect favors from nature; but to c laim them from her is our duty". This remained Michurin's motto throughout his entire many-sided and fruitful life.

The Soviet biologist T. D. Lysenko supported the Michurin theory in biological science. (Two paragraphs skipped on p. 227). As a result of

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Lysenko's work many problems raised by darwinism took on a different aspect. Darwinism not only became cleansed of all faults and shortcomings and was raised to a higher level, but it was also revised in many of its positions. From a science primarily interpreting the past history of the organic world, it became a creative, active means for penetrating into the secrets of living nature in order to satisfy the growing demands of a socialist society.

The application of Michurin's theory to biology, as developed by Lysenko, produced the most fruitful results. Agronomic methods, proposed and substantiated by Lysenko, such as the vernalization of agricultural crops, the summer planting of potatoes in the south, the disbudding of cotton plants, the inter- and intra-varietal crossings, stubble sowings of winter crops in the Siberian steppe, the nest-method of sowing kok-saghiz, and others, which considerably increase productive agriculture. Lysenko combined the teachings of K. A. Timiriazev and I. V. Michurin on form formation and the transformation of the nature of plants and animals with the theories of Dokuchaev, Kostychev and Williams on soil formation and methods of enhancing the fertility of soils, and thereby created Soviet agrobiological science. (Ten lines left out, p. 228). Among the measures designed to guarantee high and stable harvests and ensure the successful control of drought, the wide application of high-yielding varieties of agricultural crops plays a significant role. Our country may justly be proud of possessing the best varieties of cultivated plants in the world. Russian wheats, for instance, have been known for a long time and have

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been the fore-runners of a large number of famous varieties cultivated abroad, the USA and Canada, in particular. Many of the most valuable varieties developed in the years of Soviet rule by the foremost selectors of our country are grown at present on millions of hectares of territory. But in the light of the new enormous tasks which agriculture is obliged to face, one cannot be satisfied with existing levels and results in the field of selection and seed growing of agricultural crops.

Workers of scientific-research and experimental organizations, selectors, and the numerous army of advanced agricultural workers are confronted with urgent tasks in creating new agricultural varieties of highest productivity intended to meet the requirements of a higher grass-field system. Our country possesses enormous opportunities in this respect; it possesses the most progressive agriculture in the world. A powerful network of selective experiment stations, scientific-research institutes and experimental fields have been organized throughout its vast territory. Staffed with highly qualified personnel, provided with the most modern technical methods and the necessary material resources, Soviet selectors, depending upon the most progressive Michurin teachings in the world, have reached significant achievements in their work only because they did not engage in "treasure hunting" in their practical work but accepted the guidance of Michurin's ideas concerning the methods of transforming the nature of living organisms in their development by selection and a change of environmental conditions. The experiments of Soviet progressive selection have completely rejected the wide-spread Weissman "theory" of

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retarding and even extinction of processes in varietal formation because of the use of the "hereditary reserves", invented by them. The daily practice of selective-seed growing work demonstrates tangibly that a competent application of the Michurin doctrine, based on a deliberate interference in the life of a vegetative organism and directed towards its training, opens unlimited possibilities for a further improvement of varieties.' Thus if Darwin explained the process of evolution, by his theory of selection and the expediency in the existence of living organisms, the Soviet darwinist-michurinists, having accepted the theory of the transformation of the nature of organisms, are now themselves creating an evolution among plant and animal forms, directing living nature into desirable channels. (Seven lines on Darwin's theory omitted, p. 230).

Based on Darwin's statement concerning natural selection, Lysenko developed the idea further by proving the enormous effectiveness of free pollination ("pereopylenie") in the case of winter rye. He established that as a result of selection sexual cells unite in the process of fertilization that are capable of producing a progeny best adjusted biologically. Thus a mass pollination of rye improves the racial qualities of its seeds, because the biologically useful traits of winter rye are identical with the most useful economic traits (resistance to frost and disease, large size of grain, etc.) The supporters of the Mendel-Morgan theory view the process of pollination as a mechanical phenomena and believe that the pollen which first touches the stigma fertilizes it. From this fundamentally wrong premise, the incorrect conclusion was drawn that if the

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plantings of one variety of rye are distributed next to another variety or a non-varietal rye, the result will produce a lowering of the variety, because of pollination and transform them into a "population". To avoid this danger, the geneticists succeeded before in setting up a one kilometer zone to isolate the varietal sowings of rye. Experiments conducted at "Gorki Leninskie" have, however, fully confirmed Lysenko's claims and proved that the one kilometer isolating distance did not produce any benefit but instead brought harm. The experiments showed that the plot planted with winter rye of the variety Petkuskaia (elite) produced a yield of 24 c/h, while the seeds of the same variety, when pollinated over a period of two years, produced a yield of 24.7 c/h, and that finally, the Petkuski rye pollinated over a period of ten years produced yields of 27 c/h.

The same picture is observed in the case of another variety of winter rye - the Viatka. If the elite sowings of this variety produced 18 c/h, the sowings of the same variety, over a period of ten years, produced a yield of 23.8 c/h. In addition, all experimented upon sowings of winter rye did not lose their varietal characteristics (large size of grain, shape of stem, etc.). Pollination, wherein frost-resistant varieties of rye had participated, permitted the transmission of frost resistance to such large grained varieties of winter rye as - Petkuskaia, Tarashchanskaia, Novozybkovskaia.

Thus experimental data accumulated over a period of many years substantiates that in utilizing the selective capacity of plants during

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fertilization it is possible to obtain new valuable varieties of rye, to improve the racial qualities of its seeds by free inter-varietal pollination, to raise its resistance to frost and drought, and to increase the size of its grain.

The theoretical works of Lysenko led to the solution of the practical problems of winter cereals in the Siberian steppes and the Northern Kazakhstan. Up to recent times winter wheat was absent in the severe conditions of the Siberian steppe belt and the regions of Northern Kazakhstan, and any winter variety of wheats, imported into these regions invariably perished from the cold. Lysenko carefully studied the peculiarities of local climates and the system of agricultural methods locally practiced. He carefully observed the experiments engaged in by the local population, particularly those of advanced of advanced agricultural workers and noted the interesting points in their experiments. He was particularly impressed by the discoveries of the collective farmer Sekisov which showed that seeds of a wintering "fallen" summer wheat, found on a land lain waste for many years, - winter, late - half-winter and summer plants may be obtained following spring sowing. This fact attracted Lysenko's attention and as a result of repeated fall sowings in Siberia a winter variety of wheat was produced which exceeded in frost resistance the world's standard variety - the Wheat Lutescens 329. This amazing fact of transforming a summer wheat into the most frost resistant winter wheat variety was experimentally supported. In late fall sowings over the uncultivated stubble of the summer wheat Milturum 321 - single winter plants began already to appear among

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summer plants in the second generation, and in the fourth year of re-sowing all of the plants were of the winter type. Lysenko succeeded, in spite of the prevailing opinion, to prove that just in Siberia, as in no other place, climatic conditions contribute to an ideal hardening of plants, and the development of frost resistance (through dry fall, cloudless sunny days, early light frosts, only gradually increasing in strength towards winter). Thus, climatic Siberian conditions acted as a perfect "school" for creating winter crops of hardy heredity and strong frost resistance. Severe Siberian winters at the same time, do not harden all plants in the same degree, nor do they raise their resistance to frost in all cases.

On the contrary, varieties of winter wheats, which had originated in southern regions and were imported to Siberia did not become more resistant to frosts as a result of this transfer and invariably perished. Lysenko therefore proposed another method for creating new frost resistant winter varieties from summer plants not possessing the necessary characteristics. These plants lent themselves particularly well to training in Siberia, they developed a high resistance to frost and thus proved that the old heredity did not interfere with the acquisition of newly trained characteristics. It would be wrong to claim nevertheless, that the creation of frost resistant varieties of winter crops may be contributed only to Siberian areas and is not possible to achieve in the Ukraine, Northern Caucasus and the Povolzhie. The periodical freezing of winter crops in these most important grain regions of our country indicates that the

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training of winter crops in frost resistance is of equal significance in the European parts of our country. Lysenko, therefore, took advantage of the specific climatic Siberian conditions for producing non-freezing varieties for European USSR. At the same time he did not overlook the other side of the problem: a variety, developed in Siberia could acquire high frost resistance but not meet in its other properties the demands of conditions prevailing in the Povolzhie, Ukraine and other places.

In order to successfully cultivate cereal crops in the steppe and timber-steppe dry areas of the European USSR it is of greatest importance to train plants to resist drought, encourage their rapid growth, improve the quality of their seeds. These useful characteristics are all more successfully attained by transplanting a variety of winter wheat from Siberia into the southern dry steppe areas. Lysenko proposes, for instance, to train plants in frost resistance at Omsk oblast (Siberia), and such characteristics as drought resistance, rapid growth and others - at the Odessa oblast, in cases where the variety is destined for the Odessa areas. In planning the work in this manner with regard to winter varieties, we shall be able to obtain splendid non-freezing varieties of winter crops, equally well adapted to the dry conditions of the southern steppes.

In studying frost resistance in winter wheats, Lysenko worked out agricultural methods for winter crops suitable to Siberian conditions; these radically changed the situation with regard to these crops and created genuine forerunners for producing high and stable yields of winter cereals in areas where this had formerly not been possible.

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Koval', T. A. The struggle with drought.
Chapter VII, Michurin Agrobiology....

His analysis of wintering conditions and the state of experimental sowings of winter wheat at Omsk - under natural conditions and on uncultivated fields, offered the opportunity to conclude that the causes for the freezing of winter wheat are to be found not in the peculiarities of the variety but in the condition of the soil prior to cultivation. An analysis of perished plants of winter wheat revealed that they perished not as a direct result of the frost but because of mechanical injuries caused to the under-and above-ground parts of plants. A large amount of ice crystals form as a result of severe frosts in the cultivated (friable) soil, and cause a cracking of the soil and mechanical injuries of the underground parts of plants; the ice crystals also tear the plant tissues by gathering around the growing points of the tillers. On an open field, unprotected by snow, the parts of plants above ground, unable to withstand the impact of severe frosts, break and get torn by strong winds. Lysenko claimed therefore that the degree of natural or hereditary frost resistance of the various varieties of winter wheat can under those agricultural conditions not possess much significance in solving the problem of a satisfactory wintering of winter crops. His observations further revealed that in following a certain amount of agricultural practices, winter wheat in the Siberian steppes is able to withstand a severe winter and produce high and stable yields. (Omitted pp. 234 to 238).

The introduction of the grass-field system of agriculture in the shortest time possible places the problem of improving the seed growing of perennial grasses in a new light. The application of crop rotations at

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collective and state farms on a large scale and the wide practice of grass sowing, unheard of in the history of agriculture, placed the emphasis upon the task of the most rapid propagation of seeds of legumes and cereals of perennial grasses in order to satisfy the demands of drought and frost resistance, perenniality, high yields, and the maximal accumulation of roots in the soil. It is necessary to point out that up to recent times varietal seed growing of perennial grasses had remained retarded and neglected. This may be explained in part by serious theoretical errors which prevailed in the organization of selective work and the seed growing of perennial grasses. The methods of selection and seed growing of perennial grasses were until recently copied from those applied in annual grain technical and vegetable crops, while the methods advocated by Michurin, Williams and Lysenko, with regard to perennial grasses, were only applied in part or entirely ignored. It is known that perennial legumes and cereal cross-pollinated grasses represent populations, i..e. represent a complicated set of races of diverse qualities, formed in the process of selection. A large number of experiment selection stations worked at length upon improving the quality by artificial selection and the rejection of the poorest plants in the "population", aiming at making the latter more uniform and producing a new variety. The best tested old local or wild growing populations of grasses were usually chosen as a starting material, the latter being considered sort of "half-fabricated", from which the selector was obliged to produce grass varieties essential to production. A careful study of the results of the work in this direction on the part of many

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selectors indicates that it proved useless in the majority of cases. The most convincing example may be found in the results of work aimed at producing new varieties of red clover. As a rule, all newly produced varieties of red clover were not only improved but considerably poorer than the old local populations. Granted such a methodologically faulty approach to the selection of perennial grasses better results could hardly be expected. Williams wrote concerning this as follows: "....floriculture cultivates primarily plants that are subject to the process of "individual selection". Vegetable gardening presents already fewer demands upon its material. It increases its demands in nursery culture, hothouse or cultivation under cloches, and reduces its demands in the cultivation in open ground....In field crops the material of mass selection is alone of practical significance, while in meadow growth the role of selection is negative. The selected race of a meadow plant, with minor demands for water and nutrients, is unable to adjust to the wide fluctuations in the amount of moisture on meadow lands and the equally wide fluctuations in the ability to absorb nutrients. The fluctuations in the latter depend upon the presence of conditions of moisture but are produced in reverse order. Selected races are therefore not cultivated in meadows but instead - COMPLICATED NATIVE SPECIES (POPULATIONS). A complicated racial composition of an indigenous species serves best since there will always be found races on meadows that will find the most favorable conditions for their growth under available conditions." (Williams - "Pedology", 1946, p. 51)

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The word "field cultivation" ("polevodstvo") is used by Williams here as applicable to annual field crops, while the word - "meadow growing" ("lugovodstvo") applies not only to meadow vegetation but also to perennial grasses of field grass sowing. (Omitted pp. 239-241)

It is necessary to bear in mind that one of the most important possibilities for a successful distribution of highly valuable forms of varieties is the introduction into cultivation of wild growing perennial plants. The practice of seed growing has confirmed that in just this manner many of the best varietal-populations of clover, alfalfa, expartzet, timofeevka, Agropyrum, and many other perennial grasses were obtained. The large number of populations of perennial grasses, developed in the course of decades and centuries under the most diverse soil and climatic conditions, underwent a strict natural selection and all possess excellent, economically useful qualities. The gathering of seeds from these large areas of wild growing grasses and the careful testing of their useful characteristics in cultivation will permit the acquisition of many ready and valuable varietal-populations of perennial grasses for extensive distribution in production. The wide application of the Michurin method in the selection and seed growing of perennial grasses, which utilizes the methods of intra-and inter-varietal hybridizations, usually carried out without emasculation and by free pollination, does not in any way minimize the enormous importance of the work of farmer-originators who help create and propagate the old local populations of perennial cereal and leguminous crops.

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Translation ended on p. 242.

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Filatov, F. I.
Zemnoe plodorodie (Fertility of the land). Saratov, 1947. 85p. 26 F472

Translated in part from the Russian by S.N.Monson

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More on the Organization of Agricultural Experiment Work.
Sovet. Agron. 6: 47-52. Jan. 1948. 20 So84

Translated by S. N. Monson

I have already dealt repeatedly with the problem of the organization of experimental work in the USSR (the last time in the article "More Attention Required for Experimental Work," Sov. Agronomy, 7, 1946), but find it to be advisable to touch once more upon this question in the interests of its speedier solution and to the advantage of our socialist agriculture.

Agricultural experimental work in the USSR set itself many goals but demands further manifold improvement.

The law concerning the new five-year plan and the February decree of the Plenum of the Central Committee of the All Communist Party (VKP) place enormous tasks before us. These may be solved only by the proper organization of a network of agricultural experimental institutions, by efficient differentiation of labor, the necessary mutual coordination, by the establishment of the closest relationship with agricultural production, and the presence of a uniform plan in experimental work.

It is necessary, moreover, to approach the reorganization of the network of agricultural experimental institutions with the greatest care, since experimental work suffers not only from inadequacies in organization but also from frequent and hasty reforms.

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A new scheme should not be built apart and independent from the existing network, but by giving close consideration to all deficiencies and achievements prevailing in the work of those agencies that have most distinguished themselves. It is therefore important to proceed along the line of strengthening the latter

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and liquidating the rest, i.e. those institutions that have not proved their worth. In this connection, a primary task will be the revision of subject matter and the appraisal of the work of all units, beginning with the leading institutes and ending with the lowest within the network. The subject matter has to be reviewed from the point of view of set principles concerning the structure of agricultural experimental work, the prospects of its development, with consideration given to the peculiarities of the vast, socialist agricultural production, the value of organization and the strengthening of local networks, the widely unfolding of experiment work in cottage-laboratories by "stachanovtsi" and advanced workers in the field of agriculture.

Agricultural experiment institutions of all government departments should be transferred for this purpose to the over-all and if possible active leadership of the Lenin ALL-Union Academy of Agricultural Sciences, imeni Lenina, which should also direct research performed by agricultural superior educational institutions (VUS), the role of which should be raised.

In order to provide for a better functioning of the scientific direction within the system organized by the All-Union Academy of Agricultural Sciences, it would be necessary to organize the following departments or sections:

a). a department of regional agriculture with sections devoted to economics and the organization of agricultural production;

b). a department of natural history (soil, climate, flora); the distribution of agricultural production into groups; the distribution of agricultural cultures and species of animals;

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c). a division of agriculture with sections for irrigational and "bogarni" agriculture (rotation of crops, agro-chemistry, selection, agricultural meteorology, plant protection, micro-biology, etc.)

It is further expedient to organize at least several enlarged economic and natural zones throughout the vast territory of the USSR.

The agricultural experiment institutions of each zone should be headed by the largest experiment agency of the zone (zonal institute or oblast agricultural experiment station with its own scientific council.

Republic, territorial and oblast experiment stations should become the central links in an experimental chain, and within them it is essential to organize (or to strengthen wherever available) the departments of agricultural economics and the organization of agricultural production, mechanization, soil study, agro-meteorology, agro-chemistry, etc. These large stations work closely with local agrarian institutions, supervise the work of regional stations, fields, machine-tractor laboratories, cottage-laboratories, etc.). No other institutions should perform tests on agricultural products outside of the network.

Selective stations on Varietal Administration should, along with the rest of the stations, be transformed into complexes, since without a knowledge of agro-technique there cannot be good selectors or agro-chemists, etc. Economics and agro-technique are the foundation of everything. The predominance of problems of selection in subject matter at some large stations is to be tolerated, but the superfluous specialization among the various agricultural experiment stations has to be done away with.

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Konstantinov, P. N. (Prof.)

Agricultural VUS'Y (higher educational institutes) should head the work of large research institutions (local stations, machine-experiment stations, etc.).

Varietal Tests concerning every kind of crop should be combined under a single government commission of varietal testing and become part of the Ministry of Agriculture of the USSR, to act in the capacity of an inter-departmental organization, or by drafting representatives of various other agricultural departments with divisions relating to grain, technical, fodder-and vegetable crops.

Connected with this commission should be a single agricultural institute on varietal testing for the regionalization of agricultural crops.

This institute should further handle the task of distributing agricultural crops together with the All-Union Academy of Agricultural Sciences and the Council, studying productive forces under the set-up of the Academy of Science.

The most expedient arrangement of the subject matter in the higher, medium and lower network of research institutions is only possible following the regionalization of production according to the separate macro-and micro-regions.

The results of a two-year period of work by a brigade NKS under my guidance, devoted to the distribution of agricultural crops in Siberia (1941-45), as well as my familiarity with the practical work of experimental institutions confirm me in that belief.

There may hardly exist a diversity of opinion concerning the enormous agricultural significance of a proper distribution of agricultural crops and species of animals, when the demands of industry, economic and natural peculiarities if

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separate zones, oblasts, and territories are taken into account.

Complex agricultural regionalization results in maximum clarity in the subject matter of scientific-research institutions. It will permit the segregation of prospective subjects and the elimination of all accidental matter that does not meet the current demands of local agriculture. Distribution of labor among research institutes will also be achieved, while oblast and regional stations and the task of generalizing and effectively using the vast old and new scientific material will be considerably simplified. The administration of the lower network (machine-tractor and cottage-laboratories) will also be made easier.

An accurate agricultural regionalization may, however, be effected only if some of the largest local research institutions, together with the section operating under the All-Union Academy of Agricultural Sciences, will carry through directly an agricultural regionalization in their respective zones. Every institution should organize departments for the study of general problems of agricultural economics and the organization of agricultural production and labor. They should provide an economic appraisal of typical crop rotations in their respective zones, of separate agro-methods and crops, provide for the adequate distribution of agricultural crops and animals in their respective zones, etc.

We are well enough acquainted with the fundamentals of plant growing in crop rotation but do not devote enough study to their economic principles. In planning a system of economically sound crop rotations for a region, we shall thereby establish a more accurate agricultural foundation. Economic and plant growing principles of crop rotation are inseparable and inter-dependent. Nevertheless, the economic principles are to be regarded as more important, a fact frequently overlooked in practice.

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Konstantinov, P. N. (Prof.)

Wherever possible, charts of typical crop rotations, meeting the government plan for developing socialist agriculture and the multiple utilization of local natural-climatic resources, should be drawn for the relative economic evaluation of crop rotations. The latter should have an adequate number of wedges for the plots, for the use of equipment and machinery in large mechanized farms, intended for soil cultivation, sowing, care of plants, weed control, harvesting. The equipment should meet the standards of definite collective and state farms of the particular zone where typical plans of crop rotation are being studied. Similar crop rotations may also be organized outside of the territory of the Institute station.

The economics of crop rotation have to be studied simultaneously in large advanced state and collective farms where proper crop rotation was introduced long ago. It is imperative to intensify the work of the critical evaluation of planned crop rotations and their adoption into production. It is also essential to study the predecessor crops in crop rotations, bearing in mind that without crop rotations there can be neither proper agro-technique, nor tilling, cultivation, fertilization, control of weeds and diseases, effective selection, etc. One should not be content with a situation where nurseries of the original material are sometimes distributed in any odd way on lots apart from crop rotation.

In order to adequately set up the tasks of agricultural regionalization, it is necessary to intensify the study of soil science and agricultural-meteorology, on the premises of the institutes themselves, as well as in areas of the zones to be served. The hydro-termic regime should be studied and practiced directly on wedges of crop rotations, by establishing rain gages, and using various thermometers and vaporizers in the fields.

Perennial leguminous and cereal grasses in field crop rotations should be

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studied, as well as the cultivation of layers and rotation of layers of perennial grasses, hard and soft wheats on hard and soft soils in a given geographical cross-section. The problem of soil structure is closely connected with it, along with its agronomic zonal significance, the possibility of improving the structure of the soil by grass sowing, proper cultivation, the introduction of fertilizers, etc.

All above mentioned problems dealing with the improvement in agricultural methods, particularly those connected with grass sowing, are not yet worked out sufficiently, nor have they been studied in a geographical cross-section. An improvement in experimental handling will aid and speed up tremendously the solution of these problems.

Nor are the problems of mechanization of crops and varieties in geographical cross-section worked out sufficiently. It is evident that the efficacy of mechanization, agricultural-techniques and soil science will be highest if all will be correlated.

The solution of the problem of storing selected varieties of different crops is not to be delayed. It is necessary to engage in a thorough study of the physiological-biochemical peculiarities of each variety in optimal and ordinary production "regimes" of storing. The influence of the origin of seeds of the same variety, the procedure adopted in their storing, and the significance of the physiological-biochemical characteristics of seeds upon yields are enormous; the difference amounting to 40-60-89 percent and more. These new factors have to be considered in standard requirements of seed qualities.

Methods of accurate laboratory research (object of the work of special laboratories) have been more or less established. But the task of setting up vegetative

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experiments with variable live organisms on a different sub-strata is much more complicated. Here extreme accuracy is indispensable. The selection of a plant "under approval" ensures accuracy in results.

Experimentation in the field is of still greater importance. Correct results are dependent upon the object under test, optimal agricultural techniques, etc. Accurate conclusions are ensured by the choice of a variety which changes least, as is usually the case with a regionalized variety. It is also determined by the uniformity of the plot with regard to predecessor, relief, moisture, standard procedure in cultivating the soil, sowing, care, harvesting the established type of equipment used. The differences in the degree of contamination by disease and pests also reflect unfavorably upon final results. Accuracy is ensured by the typicalness of conditions throughout the year and the individual parts of the year: spring, summer, fall and winter, as well as for the most important parts of the vegetative periods and the stages and phases of the plant's development. Next follows the typicalness of seed qualities of the sowing material; the physiological maturity of seeds, cleanliness, germination, specific and absolute weights, norms of planting, origin of seeds, etc. The above listed factors which influence the accuracy of final conclusions sufficiently illustrate the complexity of methods in field experimentation.

A good experimenter has to possess the ability to generalize, draw inferences and synthesize given data and to analyze closely conditions accompanying the tests. The problem of the typicalness of entire years or various periods of the year should also command the attention of researchers. It is important to work out a method for typical years and the "approval" of the factors. One cannot trust every occasional figure or averages taken at random, sometimes obtained from most varied data. The

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experimenter should possess sound knowledge; he should, outside of his specific field, be well versed in many agricultural sciences, agricultural economics, the organization of agricultural production. He should know soils and the climate of the area under study, its region, and have a general clear idea of the soil and climatic regions of the USSR. The ecology of agricultural plants and diseases deserves particular attention. Field experiments should be conducted under conditions of up-to-date mechanization, which is also insufficiently appreciated, especially in studying the economy and productivity of crop rotation. Nor should prevailing conditions in mechanized production be overlooked. All this does not mean, of course, that sensible specialization and differentiation of labor among specialists at an experimental institution may not prevail. Close scientific contact among scientists is however only possible when thorough knowledge of a particular subject is shared by all. The work of an experimenter will be most effective under conditions of close cooperation with participants of related laboratories and if the experimenter is given an opportunity to frequently share his experiences with others.

The isolated work of selectors on winter, summer wheat and rye-wheat hybrids may serve as an inadmissable ('parallelism') duplication.

The above proposal demands a revision of the subject matter of inter-related laboratories and the establishment of necessary correlation in their work.

In the light of the above and the complicated factors of our external environment, insofar as they influence the results of field experiments, the endless talks concerning the supposedly universal methods of starting our field experiments, on the size of allotments and their duplication without regard to the object under test or the specific conditions of the environment - are utterly unwarranted.

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Konstantinov, P. N. (Prof.)

Questions like - what is to be preferred - a large or small allotment? 2-10 or 12 duplications? Under optimal conditions of the experiment, 2 duplications may be better than 10 under non-optimal conditions, i.e. in a very heterogenous, irregular natural background and a poorly cultivated soil. There are no optimal methods according to region as yet.

Another point deserving attention is the multi-variability of experiments. Even in zonal institutes they are not averse to arranging experiments on a mixed background, sometimes consisting of 30 or more varieties. The optimal (maximum) number of variations in different plans should be determined by zones.

A third point is the matter of the use of mathematics in application to experimental data. But how and by whom is it being used!! Mathematics are used in recording sound observations and also those of no value whatever. Frequently an agronomist-experimenter unversed in fine mathematical points will evaluate the results of his labor from the agricultural standpoint, reject one variety, give a positive evaluation to another, while a casual mathematician may tell him that either all experiments are good or they are all bad, depending upon the relationship of the number of good and poor variants in the experiments. The so-called medium, single, generalized error made in tests, obtained by following foreign patterns on a non-uniform heterogenous background, represents a veritable plague, especially to young experimenter-beginners.

The problem of overcoming the distortion of results produced by irregular variations in soil fertility experiments represents one of the most important tasks in experimental field work. The comparison of variants in experiments or varietal sorting depends upon the degree at which this influence may be eliminated. Equally

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important is the accuracy of their grouping. The influence of an irregular, frequently chaotic or purely zonal appraisal of the fertility of soils outweighs all positive differences. An accurately conducted twin method, as advocated by me, will considerably increase a comparison, although carelessness in its execution will often lower its advantages.

It is therefore natural to look for a method of grouping varieties not according to their actual yields, which may frequently vary in individual duplications, but according to less changeable, more stable characteristics. Such will be found in the location judged by its yield, taken from a variety or experiment in each individual duplication, a more or less uniform soil bed, a profile, contamination, etc. The tendency of better or poorer variants to occupy the better or poorer places according to yield within the limits of individual duplication, proves more stable and less subject to change than actual harvests. If, therefore, one would instead rank according to yield or quality each variety or grade (10 groups) within the limits of duplication, then the simple series of ranks according to each variation and all duplications will under an adequate agricultural prove least changeable and smoother. The percentage grouping of the relationship of each variant against the standard one will prove more correct yet. Adequate results may be obtained even at three duplications at 100 m^2 and less.

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End of Article

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Dolgushin, D. A. Mirovaia Kollektsiia pshenits na fone iarovizatsii. [World Collection of wheats against a background of vernalization]. Selkhozgiz, 1935. 109 p. 59.26 D68

(Foreword by T.D. Lysenko)

Translated from the Russian by S. M. Monson

CONCLUSIONS (p. 106 - 110)

1. The plantings of the world collection of wheats done in 1932 in the various points of the USSR clearly demonstrated that it is not possible to draw a drastic distinction between the winter and summer forms of wheats within this collection, since the same varieties may conduct themselves as either summer or winter crops depending upon the conditions under which they were grown.

There were many more winter forms at the locations of plantings that had a warm spring in 1932, as against those where the post-planting period had predominantly cooler weather. The division of varieties into summer and winter crops has practical significance with regard to definite varieties that are sowed in a given region. However, every division into summer and winter crops will be relative among the world variety of wheats.

It is always dependent upon the conditions of temperature prevailing in the post-planted period in every given region and even every year. Not all varieties are summer crops to an equal degree, nor do all winter varieties equal each other in the same measure, they differ in the degrees of their respective summer and winter traits.

2. The method of vernalization provides the opportunity of raising and obtaining grain from all specimens of a world collection during a summer

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Dolgushin, D. A. Mirovaia Kollektsiia ...
[World collection of wheats against a background of vernalization]. 1935.

sowing in any grain region of our country. In applying the method of vernalization one may compel the winter forms that do not head at spring sowing in conditions of a given region to head and to fruit. Many late-ripening forms vastly increase their development following a planting with vernalized seeds. The greater part of summer varieties that are of early ripening, in conditions of a given region, will also change their conduct and reduce the period of their vegetation. The speeded tempo of the development of plants frequently leads to the formation of other traits and characteristics which may not be peculiar to a given variety at its customary cultivation. This is the result of the plant's development taking place in other calender dates which thereby create other external conditions for the plant and in turn produces the appearance of other traits and characteristics (yield, filling of grain, glassiness, starchiness, etc.). All this demands a revision of the entire collection and a new approach to the selection and hybridization of the "newly" discovered varieties of forms.

3. The sowings with ordinary, non-vernalized seeds, from the collection in different locations of the USSR, force the conclusion that among the world's variety of wheats one may find "ready" varieties by way of an ordinary selection, varieties that are fully adapted to conditions of many regions where there is no particular need for early ripening. For such purpose, however, one should not limit oneself to a typical collection, but instead

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draw into the regional selection centers the vast choice of specimens of world collection to ensure the choice of the best variety for specific local conditions.

4. In regions where only early-ripening varieties are able to guarantee good harvests, the direct selection of early-ripening varieties from the world collection produced unfavorable results. In applying the method of vernalization, however, one may increase the group of early-ripening wheats two or three times, and among these there is a much greater chance to select the best and highest yielding varieties for a particular region, provided the selected varieties have been vernalized.

5. The greater part of the varieties in the collection are of late ripening in a given region only because they possess a high degree of winter resistance (the stage of vernalization in their case is gone through at a reduced tempo because of the spring temperature which is too high).

If, however, this delay is eliminated by vernalization prior to sowing, one finds that the early ripening is not dependent upon the degree of "wintering" in a particular variety. Among varieties that possess a high degree of wintering ("ozimosti"), one may with equal success find very early ripening varieties for any region by cultivating them and applying vernalization.

6. Among the early ripening varieties (at an ordinary sowing) there are quite a few of those which in some regions speed up (5-8 days) their development considerably following the sowing with vernalized seeds. This speeding

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up is the result of the fact that the plants grown from vernalized sowing material pass through the stage of vernalization prior to the sowing, while the non-vernalized plants pass through it only following the sowing.

7. Earlier booting of vernalized specimens in the majority of USSR regions leads, as a rule, to a higher absolute weight of the grain (to its greater filling out).

8. The distribution of the forms of wheats with a different degree of wintering is determined by the conditions of their growth in the world. The most varied forms of wheats - with regard to wintering - are found concentrated in those countries where fall sowing is practiced and where a rather mild winter does not threaten even summer forms with freezing. In countries with a strictly continental climate, however, there are principally two extreme groups: those with the greatest numbers of degrees of wintering and those with fewest. A preliminary analysis of the collection of wheats, according to the stages of vernalization, permits the establishment of five groups which in practice differ depending upon the conditions of pre-sowing vernalization.

(continued on next page)

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No. of groups	Number of Days of Vernalization	Optimal Temperature during Vernalization
I	5 - 8	8 - 15°
II	10 -15	3 - 6°
III	20 -25	2 - 5°
IV	30 -35	1 - 4°
V	40 -45	0 - 3°

9. Experiments with growing vernalized and non-vernalized collections under conditions of days of normal length (for Odessa), and under conditions of uninterrupted light, revealed that varieties differ from each other in the character of their light stage development. Some pass through it more rapidly under conditions of uninterrupted light, others conduct themselves almost in the same manner during a normal day as under uninterrupted light.

Many varieties, of a brief stage of vernalization, prove to be late ripening under southern conditions only because they are delayed in going through the light stage of development. Among the wheats of the world's collection are quite a few varieties that have yielded good results in the quality and quantity of their harvests, when cultivated under conditions of an artificially lengthened day. In ordinary conditions, at a given location, they proved, however, altogether unsuitable.

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10. The theory of the stage development of plants offers the opportunity to solve the problem of selecting the parent pairs for crossing for the purpose of producing a variety with the most suitable length in vegetative period for a given location, i.e. a variety that will not require pre-sowing vernalization and a longer day, since its development will fully conform to the conditions of the given location.

From this point of view the world collection of wheats acquires a tremendous importance as the wealthiest source of material for selecting parent pairs in order to produce the best varieties in USSR regions.

End of Chapter

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Gosselekstantsii k 30-i Godovshchine Oktiabria
[State Breeding Stations on the 30th Anniversary
of October]. Selek. i Semen. 14(11): 75-79.
1947. 61.9 Se5

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Translated from the Russian by
S. N. Monson

GOVERNMENT SELECTION STATIONS AT THE 30th OCTOBER ANNIVERSARY

(Brief Review)

A powerful network of selection research and seed-growing stations, as well as of scientific-research institutes studying various problems of agriculture has been created for the 30th Anniversary of the Great October Socialist Revolution of the USSR.

Within the system of the Principal Administration of Grain and Oil Crops of the Department of Agriculture of the USSR there are 71 government selection stations, not counting those which in the course of the years of their activity changed from stations into large scientific research institutes.

The former Kamenno-Stepnaia GSS (Government Selection Station) was recently reorganized into the Institute of Grain Economy of the Central Black-Earth Belt of the USSR, named after Prof. V. V. Dokuchaev. Prior to that the All-Union Selection-Genetic Institute was founded at the Odessa Station.

At the Saratov Station the Scientific Research Institute of Grain Economy was organized for the South-Eastern region of the USSR. At the Moscow Station (Nemchinovka) - the Scientific Research Institute of Grain Economy of the Non-Black-Earth Belt of the USSR; at the Omsk

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Station - the Siberian Scientific Research Institute of Grain Economy.

Soviet selection stations of all systems have produced and transmitted to the government grade-testing agency - up to 1937 incl. - 951 varieties; from 1938 to 1946 - 1047 varieties, and for 1947 - 88 varieties. The stations that enter into the system of the Principal Administration of Grain and Oil Crops have produced and transmitted to the Government grade-testing agency - from the time of the organization of Soviet selection and seed growing up to 1937 - 548 varieties of different crops. From 1938 to 1947 incl. - 645 varieties, of which 73 varieties were transmitted to the government grade testing agency in 1947.

In the period of 30 years - 249 varieties were "regionalized by the GSS, of which 153 were adopted from 1938 to 1946 and 23 varieties in 1947.

There are 92 varieties undergoing economic approval. In 1947, as in the preceding years, the government selection stations carried high ratings for executing government plans for harvesting, seed-cereal deliveries, and field labor.

By October 20, 1947, the plans with regard to harvesting were fulfilled 100 percent, 80 percent of the stations completing the work already by September 27, 1947. The quota for threshing was fulfilled 98 percent by October 20; cereal delivery - 113.4 percent; elite - 107.0 percent.

By September 27, 1947 the quota on cereal delivery met 100-110 percent by 13 stations; from 10 stations 111-130 percent; from 5 stations 131-167 percent, while several stations met quotas of over 110 percent:

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Novo-Urenski - 182 percent; Uralski - 184 percent; Priekulskaia - 196 percent; Tulunskaia - 208 percent; Milutinskaia - 226 percent.

The quota was exceeded by September 27, 1947 by 30 stations in the delivery of the elite. The Severo-Osetinskaia GSS produced 250 percent; Milutinskaia - 216 percent; Priekulskaia - 196 percent; Kharkovskaia - 186 percent; Tulunskaia - 181 percent; Novo-Urenskaia - 178 percent; Petrovskaia - 158 percent; Uralskaia - 153 percent.

During the Second World War the GSS that had fallen into German hands were almost completely destroyed. The Shatilov Station, for instance, the oldest in the country, which produced valuable varieties, growing on close to 4 million hectares, was practically wiped off the earth. Enormous destruction was wrought by the German occupation armies at the Kharkov, Belorusskaia, Rostov and other stations. Despite considerable difficulties these stations resumed their activities by 1946 almost in full and exceeded the government quotas.

The Shatilov GSS submitted 2 varieties for government grain-testing - in 1946, of oil flax (Shatilov 402 and Shatilov 3). In 1947 the summer wheat Shatilov 1 and the buckwheat Skorospelka 3 were delivered to the government grain-testing warehouses. The quota for cereal delivery was fulfilled up to 106 percent by October 20, 1947. The medium yield of grain - and leguminous crops was 15.6 centners per hectare.

In the period of 30 years the Shatilov GSS delivered to government

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grade-testing stations 29 varieties of various crops, among them 18 crops since 1938. Six of these varieties were adopted, one is as yet undergoing economic approval.

The KHARKOV GSS, (its director - member of the Ukrainian Academy of Science, laureate of the Stalin award - V. Y. Yuriev) has in the course of 30 years produced and delivered to government grade-testing stations - 48 new varieties, of which 17 were adopted; following the expulsion of the German occupationary forces, the station has fully restored the working capacity of its principal departments, as well as its laboratories, and has submitted to the GSS new valuable varieties: in 1945 - the sunflower Gvardeets; in 1946 - the winter wheat Milturum 36-241 (Salute) and the Kidney-bean Lovinka; in 1947 - the summer wheat Zenitka 266/237.

Of varieties transferred to the GSS immediately prior to the outbreak of the war, the summer wheat Narodnaia was adopted in 1947.

By the 30th October Anniversary the station fulfilled the plan of delivery of the "elite" - 183 percent and of cereals - 129 percent. The average yield of grain and legumes for 1947 - was 19.4 centners per hectare. The plan of disking stubble was fulfilled 113 percent, of winter planting - 101 percent, of plowing and fallowing - 100 percent.

The WHITE-RUSSIAN GSS has submitted to the Gss between 1922-1938 - 13 varieties of its selection; from 1938 - 1947 inclusive, - 10; two varieties were adopted. In 1947 the station delivered to the Government

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Commission (Gosscommissia) for grade-testing 3 new varieties of peas. In 1946 already the station fulfilled its quota of delivering 100 percent of the elite. In 1947 the quota of cereal delivery was fulfilled 131 percent, and of elite - 116 percent.

The Mironovskaia GSS, which gave the Soviet Union the widely known variety of winter wheat "Ukrainka" has fully resumed its activities. Already in 1944 and 1945 the station exceeded its planned quotas with regard to the yield of grain and leguminous crops by 20 and 24 percent. In 1946, in spite of the drought, the station obtained an average of 12.9 centners per hectare in grain and leguminous crops, while its average yield of winter wheat amounted to 19 centners per hectare (on some lots - 29 centners per hectare).

In 1947 the average yield amounted to 14.0 centners per hectare.

The quota of cereal delivery was fulfilled 100 percent.

At present the station produced a new potential variety of winter wheat - Gostianum NE-1, which is being prepared for delivery to the GSS. In addition, the winter wheat Lutescens NC-4, Kidney beans Nos. 2 and 14, etc., are being delivered for government testing. Two varieties were adopted by the station.

The LENINGRAD GSS produced and delivered to the government network of grade-testing by 1938 - 23 varieties, and since 1938 - 13 varieties: the winter wheat NE-70/33, the summer wheats - Nadezhda, Pamiats Urala (Memory of the Ural), Tulun 5 A/32, Tulun 70 F/8, and Severianka (the

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last three adopted for northern regions), the buckwheat Althausen 11 (adopted for northern regions), the summer barley LS-1, the oats Putika 588, the pea Golden II, the Olivkovii, the hybrid Harmaninii, the Snezhinka (the last adopted for northern regions). Early in 1944 work was begun on perennial grasses and vegetables; from 1946 on - on potatoes. The work of the laboratories of plant protection and seed growth was widened, and in 1946 the laboratories of plant physiology, chemistry, and milling-baking were organized. Agricultural methods for grass crop rotations were being developed.

Of the produced varieties 7 were adopted.

In 1947 the station fulfilled its plan for cereal delivery and that of elite - 120 percent. The average yield of grain-and leguminous crops in 1947 was 15.2 centners per hectare.

The KRASSNODAR GSS fully restored its selection-seed growing work, destroyed by the German occupation in 1946. Since its liberation from the occupation forces the station has systematically over-fulfilled government quotas of delivery of elite: in 1944-112 percent, in 1945 - 116 percent; in 1947 the quota of delivery of elite was fulfilled 117 percent, in cereal delivery - 138 percent. In 1947 the average yield of grain and legumes was 18.7 centners per hectare.

Of the 52 varieties of different crops produced by the station - 11 varieties were regionalized and adopted for production in the Krassnodar region and adjoining sections: of winter wheat - 4 (Lerrugineum 662

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662, Krassnodarka, Pervenets, and Novo-Ukrainka 83), of winter barley - 3, of summer wheat - 1 (Cordeiforme 27), and of forage grass - 3. The variety Ferrugineum E-13 was pronounced acceptable. 21 varieties were delivered to the GSS between 1938 and 1947: 12 varieties of winter wheat, 2 of summer wheat, 2 of winter barley, 1 of vetchling, 2 of chickpeas (Cicer?), 1 of soya, and 1 of corn.

Since its liberation from the German occupation the station delivered to the GSS 9 varieties of different crops; between 1944 and 1946 - of winter wheat - 4 varieties (Kubanskaia 131, 122, 133, and the Skorospelka L-1); of winter barley - 1 variety (Krassnodarski 248); and one variety of vetchling; in 1947 two varieties of summer wheat (Kubanka 693 and Garnovka 1487) and the corn hybrid Krassnodarski 1 were submitted to the GSS.

The varieties of the station exceed to a large extent the existing standard varieties with regard to yield and other qualities. Novo-Ukrainka 63, for instance, produces a yield that is 31 percent higher than the Ukrainka; while the corn hybrid Krassnodarski 1 surpasses the Sterling in yield by 12.2 percent, and is also superior to the latter with respect to resistance to winds and fusarium.

The ROSTOV GSS, which suffered severely during the period of German occupation, possesses also great achievements to its credit.

Between 1938 and 1940 and from 1943 to 1946 the station has fulfilled its quota of delivery of seed varieties at an average of 139 percent,

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which includes its delivery of elite of 107.5 percent.

In 1946 the station fulfilled its assignment to deliver an order of elite - 103 percent, of perennial grasses - 120 percent, and produced an average yield of grain crops, in spite of a sever drought and hail-storms - 12.1 centners per hectare (the quota calling for 12 centners per hectare).

In 1947 the station fulfilled its plan of cereal delivery - 127 percent, of elite - 112 percent. The median yield was - 12.2 centners per hectare.

From 1937 up to the time of the war the station produced five varieties of perennial grasses from local wild growing species; of these 2 varieties of ["Ekspartset", Onobrychis Scop. and 1 of "Zhitniak" were delivered to the GSS. A potential variety of Bromus L. unbearded and of half-rootstalk, as well as wealthy hybrid material on lucerne. 4 varieties of winter wheat were produced, of which the Zernogradka, distinguished by its high yield, resistance to frost and rust, crumbling and non-lodging, as well as its good milling and baking qualities, stands out prominently; the variety is suitable for moist regions and it has since 1946 been accepted by the economic approval group for 4 regions of the Rostov district, and given equally good results in the Voronezh district. In the pre-war period the station delivered to the GSS - 3 varieties of summer wheat (among them Gordenform 672, Donskaia Garnovka), adopted in 1942. At present the station possesses two new

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potential varieties which show a higher yield and resistance to drought than the standard variety Melianopuss 69.

Between 1940 and 1941 the barleys Medicum 440 and 214 were produced and delivered to the GSS; seeds of these varieties were almost completely looted during the German occupation. By 1946 the variety was propagated anew and delivered to the GSS.

In 1947 two potential varieties of millet: Lomovoe 216, exceeding in yield the standard variety by 44 percent and the Kamyshinskoe 747, that produced a yield of over 48 percent above the standard variety, were delivered to the GSS. Altogether, by 1938, 14 varieties were delivered for grade-testing, and from 1938 to 1947 inclusive - 10 varieties; of these 2 varieties were adopted.

Positive results were obtained at the principal grade-testing stations of the potato variety C-24 produced by the Rostov GSS.

Considerable work is done at the phytopathological and ent omological laboratories, of which the results have appeared in print.

The Rostov GSS has restored the work of 10 collective farm hut-laboratories and has established 17 new ones; it has worked out methods of conducting experiments at these hut-laboratories, and arranged for courses for the benefit of its supervisory staff.

The BALTIC REPUBLICS, which in the past have produced a series of varieties that are at present adopted in these republics, have as yet

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not fully developed their selection work, although they have resumed varietal seed growing. In 1947 the PRESKULSKAIA GSS (of the Latvian SSR) fulfilled its quota of delivery of cereals - 252 percent, and that of elite - 247 percent. Standskaia GSS (of the same republic) fulfilled 247 percent of its assignment, and in 1947 it delivered to the GSS one variety of oats (Dzinbirs), one variety of winter rye (Standskaia), one variety of winter wheat (Kursaa).

IIGEVSKAIA GSS (Esthonian SSR) fulfilled its plan of grain-cereal delivery 632 percent.

Medium yield - 25.8 centners per hectare. In 1946 the station delivered to the GSS the winter wheat Luunia, improved in 1947, in addition to 6 varieties of oats, 2 of clover, and 1 of peas.

Let us consider the results of the work of several GSS stations which did not have to interrupt their work during the war.

The URAL GSS serves the regions of Trans-Kazakhstan, the Aktubinski and Gurievski districts of the Kazakh SSR, which are located on the borders of territories of possibly arid agriculture and deserts. These lands experience first the effect of the dry winds (from the lowlands of the Aralo-Caspian region) and more than the other regions of the south-east are subjected to droughts.

The greater part of the best lands had been already plowed, contaminated, its structure spoiled ("obesstrukhturena) prior to the Revolution, and was not capable of producing resistant, high yields even

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during favorable years.

The URAL GSS exercises systematic control over unfavorable natural conditions. The station introduced grass-field crop rotations, organized snowchecks of the most effective and inexpensive kind, utilizing the group arrangement of shields which increased the efficiency of the method at least twice; it applied snow-plowing of the Ridger (?) type, established snow shields, that accumulated snow covers of 60-70 cm, and developed the planting of forest-shelter belts. The station selected the best composition of grass mixtures for the given zone and worked out an agro-technical method of sowing perennial grasses, summer wheat, winter rye, etc.

As a result, the yield of grain crops of the station exceeded in 1946 that of the collective farm two or three times. The median yield of grain crops and legumes in 1947 was 14.1 centners per hectare.

From 1937 to 1946 the Ural GSS have averaged a delivery of cereal crops of 206 percent, and of elite - 192 percent.

In 1946 the plan of cereal delivery was fulfilled 250 percent, in 1947 - 206 percent; delivery of elite for 1946 was 265 percent, in 1947 - 165 percent.

The station produced in 1938 eight varieties from the material of old peasant varieties. 4 varieties of summer wheats were delivered to the GSS, all distinguished by their resistance to drought, their large and productive stalk and a large grain of high quality; it also pro-

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duced 5 varieties of millet which exceed in yield the standard variety Saratovski 853 by 13-28 percent - on "bogar" (arid soil) and by 28-63 percent on irrigated soils. The local varieties of millet were improved: Jarbetinskoe white, Wellski white, and Gurievskoe white. In addition, an especially valuable hybrid variety of large-grained millet and a variety of lucerne, the Ural blue, distinguished by a high yield of straw and seeds, were produced.

On the KRASSNOVODOPADSKI GSS, serving the Southern-Kazakhstan, Djambulski and Kziil-Ordinski districts of the Kazakh SSR, grass field crop rotations were produced in 1939. The varieties of this station are grown on enormous areas of land, beyond the above districts as well. In 30 years the Government Commission received from this station 9 new varieties of wheat, 4 of winter barley, 1 of oats, 3 of safflower, and 3 of flax. In 1947, the oil flax Krassnovodopadski 3 was delivered, 2 varieties of safflower (Carthamus tinctorius), the Krassnovodopadski 4 and 6, and one variety of forage watermelon, and 1 of lucerne.

Altogether a total of 13 varieties were produced and delivered to the government grade-testing network prior to 1938, and from 1938 on - 6 varieties; 4 varieties have at present been adopted.

The station has developed a system for cultivating and fertilizing arid soils, and has introduced a series of new agricultural methods for the raising of grain crops. Beginning 1946 it organized experimental work

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in 10 collective farms of the South-Kazakhstan district.

In 1947 the medien yield of grain - and legumes at the government selection station was 11.3 centners per hectare, while its allotment on cereal delivery was fulfilled 130 percent, that of elite - 153 percent.

MILUTINSKAIA GSS (Uzbek SSR) has produced 14 varieties prior to 1938 and 12 since 1938. Of these there were 10 varieties of wheat intended for the different zones of the Uzbek SSR, among them Eritrospermum 5755, Ksili-Bugdai, Grekum 752 - were adopted, and the rest are undergoing economic approval.

In the past 8 years the station has produced and delivered to the GSS two varieties of wheat: Grekum 2440 (for fall sowing) and Kolan (Grekum 3866) (for spring sowing). In 1947 the winter wheat variety Eritrospermum 26783 was delivered for government grain-testing.

In addition, 4 varieties of summer barley, 2 of winter barley, the oil flax Bukharski 32 (adopted in 1946), the oat Byzantina 11, 1 chitniak, and 2 - lucernes (1 adopted) were produced at the station.

At present many more new varieties of wheats have been produced, all exceeding in yield the standard ones, and further selection is in process.

By a multiple selection made of the Saratov 169, the sunflower variety Miluitinski 39 m, intended for delivery to the government commission, has been produced, and 3 new varieties obtained from the same original material are under further study.

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State Breeding Stations on the 30th Anniversary of October. 75-79. 1947.

The station has improved the local variety of safflower, has produced the variety Egyptian 114, and is at work on 3 families, the numbers 90, 108, and 193. The variety of millet Gallia-Aral 530 and 3 varieties of chick-peas (Cicer) were produced.

In 1947 the plan of cereal delivery was fulfilled 246 percent, that of elite - 237 percent, and the median yield of grain - and leguminous crops was 12.0 centners per hectare.

The station conducts valuable work in developing field - forest shelter belts in a section where until now this had been considered impossible.

The AZERBAJIAN GSS, established in 1937 in the selection district of the Gandzhinski experimental station, possesses many valuable varieties of winter wheat and barley of its own selection.

By 1938 - 24 varieties were delivered to the government grading network, and since 1938 - 17. Adopted were 11 varieties and 4 are under economic approval.

The Azerbaijan GSS produced 6 varieties of wheat by crossing hard wheat with Khoranka; of these the variety Shark was adopted in 1945, and the barley Pallidum 330/2 in the same year.

The Shemakhin experiment point attached to this station produced, prior to the war, varieties of hard wheat for the benefit of the pre-mountain region (Apulicum 10440/2, Cordeiform 14504/2, 14503/1, 11527/8)

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and the soft wheat variety for the mountain zone - Ferrugineum 14719/1, which is still under test at the station. Local wheat varieties were improved.

In 1947 the station fulfilled its quota in cereal delivery - 114 percent, and in elite - 111 percent; the median yield of grain and leguminous crops was 14.7 centners per hectare.

The NARIMSKI GSS, organized in 1937, achieved extraordinary results under conditions of the north-Siberian forest zone. In the past years many varieties were produced and transferred to the government network of grain-testing. Among them were the: winter wheat Taezhnitsa 995, Sibiriatchka 1105, Narimchanka 1156, and the particularly valuable by its qualities - Eritrospermum 1168; the winter rye - Narimskaia 13, and Taiga 343; the summer wheats - Narimskaia 1, 2 and 5; the buckwheat Narimskaia; 3 varieties of barley, 4 of oats, 2 of peas, 1 of millet, 1 of clover, 2 of potatoes, and 4 of tomatoes. The winter rye Taiga 343, the summer wheat Narimskaia 5, the barley Eudum 347/42, the millet Narimskoye, the bare-seeded oats Narimski 614, and the "odno-ukossni" (one-cut) clover Narimski - were submitted for government grain-testing in 1947.

Along with the government grade testing practical approvals are being performed at the kolkhozi (collective farms).

The potato "arimchanin (S-36) is widely distributed in the kolkhoz of the zone where the station is situated; in the past few years 2 new

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varieties were produced: S-361, and the potential variety S-289.

There are many varieties of different crops under preliminary and station testing at present.

Since 1941 the station has produced field-grass crop rotations. The collective at the station has worked out methods of agricultural technique for high yields under conditions of the north-Siberian zone and has succeeded in achieving extraordinary yields for this zone. The average yield of grain and leguminous crops for a period of 9 years was 22.1 centners per hectare, of seeds of perennial grasses - 1.8 centners per hectare; of potatoes - 190 centners per hectare, of vegetable and root crops - 294 centners per hectare, of seeds of vegetable and root crops - 6.4 centners per hectare.

The station yearly overfulfills its quota for delivery of seeds of cereal crops (an average of 128 percent for 9 years), and it fully takes care of the requirements in elite seeds for the local economy.

In 1947 the average yield of grain and leguminous crops was 21.9 centners per hectare.

The TULUN GSS (Irkutsk region) produced valuable varieties. Among them - the summer wheat Udarnitsa, Tulunka, the barley Zalarunets, the oat Baikal, the millet Tulunskoye 39/9, the clover Tulunski and Cherugalski, the timofeevka (Pheleum L.) - Nikitaevskaia, and the potato Veianets. 81157.

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The Tulun station altogether developed 35 varieties, of which 12 were adopted.

There are 3 varieties of millet at the government grain-testing point (early growing, exceeding in yield the standard variety by 20-27 percent); one variety of early barley, and one of naked-seeded barley. Aside from these, 3 potential varieties of summer wheat (among these one distinguished by exceptional early growth), and 3 varieties of early barley.

From a series of potential numbers of "riizhik" number 2 ("gold of pleasure"; Camelina Frantz) possesses a very large grain, exceeding that of the standard variety, is also superior to it in yield by 26 percent, and ripens 19 days earlier. 4 potential varieties of clover are under test.

The station has produced 11 crop rotations in the surrounding kolkhozi; it organizes expeditions for purposes of consultations in the field; arranges for lecture courses, and presents reports at meetings; it also publishes articles on a variety of agricultural subjects. In 1947 the delivery of cereal crops was fulfilled - 259 percent by the station, and of elite - 220 percent. The average yield of grain-and leguminous crops was 14.3 centners per hectare.

The KAMALINSKAIA GSS (Krassnoyarski region) was organized at the East-Siberian zonal grain station. At the time of reorganization there

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were 2 varieties of summer wheat at the government grain-testing station, 9 varieties of oats, 6 of barley.

The varieties of wheat Kamalinka and Kolkhoznitsa, produced at the station, have a wide distribution. Since the time of reorganization 13 varieties of different crops, including the winter rye Kamalinskaia 9, the summer wheat Lutescens 1729, the oats Udarnik and Vidvizhenets, the lucerne Kamalinskaia 530 and 930, and the clover Kamalinski 304 - were adopted and have passed into production. Other varieties of "Owsianitsa", Festuca L., "timofeevka" - Phleum L., Camelina Krantz ("riizhik"), and hemp are under economic approval in production.

The average yield of grain and leguminous crops in 1947 at this station was 19.3 centners per hectare.

In 1947 the Kamalinskaia GSS fulfilled its quota for delivery of elite - 140 percent and that of cereal delivery - 123 percent.

In 1939 the station was awarded the certificate of first grade at the All-Union Agricultural Exhibition.

Particular attention should be directed to the work of the new Lysenko Selection methods, well known by all selectionists, performed at the All-Union Selection-Genetic Institute, located at the Experimental base of the Lenin Academy of Agricultural Sciences - Gorki-Leninskie, where the principles of Soviet agro-biological science are experimentally worked out. Also to the Dokuchaev Institute which successfully develops

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the theory and practice of scientific agriculture, as created by V. P. Williams; the Siberian Institute of Grain Economy, which works on the development of a new agricultural method for Siberia, based on the teachings of Michurin, Williams and Lysenko; and the Moscow GSS, which daringly and accurately works out and applies in practice the grass-field system of agriculture expounded by Williams, as well as the active Michurin-Lysenko selection methods. Further attention should be given the works of the South-Eastern Institute of Grain economy, the oldest seat of productive Soviet selection work. The Institute of Grain Economy of the South-East has, as a result of its wealthy experience in the field of agricultural methods, - reached the stage within the post-war period where in local agriculture it definitely follows the paths of development proposed for introduction into practice by the Williams theories, the only accurate ones, although they require a deep study of environmental conditions peculiar to the given agricultural zone, as well as the working out of a zonal variant for the solution of each link of the Williams chain of agricultural methods. "Selection and Seed Growth" devote series of articles in the current issue of this magazine to the work of these institutions and will continue to do so in the succeeding issues.

End of ~~Chapter~~ Article

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Dolgushin, IU. U istokov novoi biologii [At the sources of the new biology]. Moskult. 1949.
72 p. 482 D68

Translated from the Russian by
S. M. Ponson

TWO POINTS OF VIEW (pp. 3-9)

The history of science known many heated controversies. Actually, the decision of every scientific problem of any consequence is always followed by the conflict of the opposing view points among the respective representatives, - whether they concern the problem of the shape or movement of the Universe or the origin of fire, light, air, electricity, etc. The most protracted and fierce dispute, however, which dates back to the beginning of our century, has been solved in our country, before our very eyes. It concerns facts upon the proper understanding of which depends the success of the future struggle of man to conquer nature's organic world.

The hare, hermine, grouse, and many other animals change their fur in the winter, when it turns white. This helps them to hide in the snow and look for food. Many species of fish that live at the deep bottoms of oceans, where the rays of the sun never penetrate possess organs that emit light. The flowers of many plants are provided with a complete system of adjustments that permit insects to transfer the pollen from flower to flower. Caterpillars, living on leaves, - are green, while those dwelling on the bark of trees are spotted and brown....

One may cite thousands of examples of a similar expediency of the adjustments of animals and plants to the environment of their particular life sphere. How did this all occur? Why is the life of animals and

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plants so "wisely", so artfully adjusted to environmental surroundings? These are the problems that have always confronted man who observed life in nature.

The primitive man had difficulty in rejecting the idea that in all this adjustment and "expediency" there were traces of some super-natural, higher reason. God has created it all, he has decided, once for all; nature is eternal and inalterable in its ways.

Pourgeois, idealistic science has not moved far away from this concept. The Swedish naturalist Charles Linnaeous who first began to count and classify all species of animals and plants, decided that there "were as many species, as there were different forms produced in a world created by God."

The well known French naturalist Cuvier studied an enormous number of species of excavated animals, but did not attempt to establish a direct connection between them and contemporary animals. He claimed that all known species of animals were invariable and could not be produced by the transformation of the oldest races.

This was the period when the nature of animal and plant life appeared to the majority of naturalists as something unmovable, ossified, and permanent, created once for all times. They did not accept the possibility of changes in natural development nor did they notice them. Religion supported this concept which prevailed throughout and it left its deep

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imprint upon the subsequent history of natural science.

The point of view, nevertheless, provoked serious protests. Many advanced scientists tried to refute it. The French naturalist St. Hilaire already claimed that all animals were built according to a "single plan", and that the differences among them were the result of more or less significant changes of the individual organs, produced as a result of environmental conditions. In studying crocodiles, St. Hilaire reached the conclusion that contemporary types of crocodiles were produced by way of transformation from extinct, excavated forms.

The poet and biologist Goethe asserted directly that there is nothing stable in nature, nothing reticent, or lying at rest, but that, on the contrary, everything is changing and in constant movement. Buffon recognized the active role of climate in the production of new species. Finally, Lamarck rose in his research studies to the recognition of the wide generalization in principle: he was the first to proclaim the theory of the development of the organic world, but committed an error, in his deductions: he attributed to organisms an eternal inner striving for perfection - an argument that was of small persuasiveness and which rendered valueless his correct generalization.

Only with the appearance of the famous work of Darwin in 1859, did the theory of evolution become an irrefutable principle which explained the origin of the organic world on Earth.

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How did Darwin solve the controversy? And what made his arguments so convincing?

The principal and decisive argument laid down by Darwin was his theory of selection. It explained that in the world of animal and plants from among an unlimited variety only those new characteristics take root and improve - which help the organism to develop and exist in a given environment. The "expediency" in nature became understandable in the light of this, as well as the ability of animals to adjust to environmental conditions.

Darwin's theory, confirmed by an enormous amount of data, dealt a decisive blow to all discussions concerning the immovability and immutability of the species and forms that inhabit the Earth. It confirmed the great ability of transformation and the eternal movement in nature.

Darwin's theory, however, proved unreconcilable with the prevailing religious viewpoints. The struggle between the supporters of the Darwin theory of development and the defenders of the immutability of nature, as "created by God", burst into flame with renewed force. The results of this struggle are known. The Church supporters won; Darwin's ideas were suppressed artificially and were rejected by the prevailing metaphysical science.

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One could withdraw Darwin's books, pronouncing them harmful, prohibit the teaching of his theories in schools and universities, but it was no

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longer possible to eliminate Darwin's ideas from biology. Only one thing remained: to defame them by the establishment of another theory that would oppose it, and intended to be as convincing, while less disturbing to the views of the ruling classes and the Church, in particular.

Here the anti-darwinists began their search for a new theory. As is always the case in ~~the~~ similar circumstances, they began by recognizing Darwin "in general and on the whole", but subsequently started to correct and "supplement" his teachings. Taking advantage of the fact that Darwin in his work did not touch upon the problem of the very mechanics of the development of new characteristics in the organism, they began filling this gap. As a basis they used the "laws of uniformity" observed by the modest monk of the Brunn Czech monastery - Gregory Mendel, who was preoccupied with the crossing of different varieties of peas and who established that: 1). hereditary characteristics are invariable by themselves over the span of an enormous number of generations and 2). that the combination (union) of parental characteristics in progeny is altogether accidental and does not depend upon any external conditions.

Thus began the formation of a new line in biology - genetics, the science of heredity and transformation. Let us note, incidentally, that the name genetics is not derived from the word "gene", as many believe, but from the Latin word "genus" meaning race, generation.

Genetics is the youngest biological science. Its orgin was laid in 1901. Since then the Mendel laws of uniformity have been loaded down with

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data and generalizations, with the result that at present genetics appears as a most complicated system. We shall not appraise it in detail but shall dwell only upon its principal statements and conclusions.

At the basis of the so called "classical" genetics, created by the bourgeois scientists Weismann, Morgan, Mendelists, and others, lies the concept of a gene as a material part of some unknown "hereditary substance" that is capable of calling forth in a live organism in some unknown manner the development of all its characteristics and features. Thus, there exists the gene of a black wool and a gene of a white wool, a gene of a long and a gene of an oval leaf, a gene of a beard and a gene without it, a gene of mathematical ability, a gene of musical ability, etc. In other words, no matter which characteristic of any animal or plant we may take, they all have their gene, and consequently, there are many of these. They are located in chromosomes - particles that exist within the inner cells and are so small that they are invisible under any microscope, even the electronic one. The sexual mother cell unites during fertilization with the father cell and as a result the children acquire the complex of genes which produce in them the development of paternal and maternal characteristics.

The principal characteristic of the gene is its invariability and its independence from external conditions. It is true that geneticists were obliged to accept this subsequently as only relatively so (otherwise one

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would not be able to explain the changes in nature and the process of the development of the organic world). The gene therefore became "relatively" invariable: and the concept of mutation was accepted, that is, the sudden change of the gene produced by some unknown inner reason.

The very nature of mutation is accidental, environment does not influence the transformation of the gene, and consequently, also the characteristic, in any specific direction. Among transformed characteristics only those may be inherited which have occurred as a result of mutation. Environmental conditions influence, however, only the degree of producing that or the other trait in the organism, but the changes connected with it may not be inherited. Mutations are, in addition, extremely rare (the fertile fly of the drosophila has one mutation for 10,000 individuals; corn has one to a million) and, as a rule, they lead to the appearance of defective, ugly forms in the progeny.

From the practical point of view, the gene is considered inalterable since within the period between two mutations it does not change. Being transmitted from the parents, the genes, and therefore their characteristics, may unite in the children in any combinations, following only the law of accident, and altogether independent of any external conditions.

Such are the fundamentals of present day genetics. It is not difficult to note that covered by the screen of a visible materialism (the genes are the "material foundations of heredity", "the atoms of heredity"), this

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system, preserved fundamentally all principal features of the old idealistic, religious-bourgeois concepts. Too much attention is allotted to "accident" and the independence from environmental conditions. Back of these traits one discerns without difficulty the good old God, the inveterate darwinist....

Let us now see where this system leads us in practical conclusions.

One of the founders of genetics was the Danish botanist Johansen to whom belongs the honor of having coined the word "gene". Aside from that, he established the theory of "pure strains", which was placed at the foundation of present day seed growing. This theory proclaims that the progeny of one self-pollinated plant remains unchanged in its nature over the span of innumerable generations.

Actually, if a plant is fertilized by its own pollen, this means, of course, the same assemblage of genes, and along with it the same traits and characteristics that pass on from generation to generation. It also means that it is no longer possible to improve a variety by selection among plants that have once been selected and propagated ("pure strain"). This because, as is known (in genetics), no matter under what conditions a plant is cultivated and irrespective of how its external appearance may have changed under those conditions, it is unable to transform its nature, its hereditary traits.

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In this manner, under the influence of Johansen's theory, the improvement of hereditary traits of the pure-strain varieties of self-pollinating plants, i.e. such plants as wheat, barley, oats, cotton, flax, etc., was considered impossible. The task of seed growing was reduced not to the improvement of varieties but only to the preservation of the purity of seeds.

Seed growers received the following directions from geneticists: it is immaterial whether seeds of strong or weak plants are taken for the propagation of a variety, the latter will remain the same and preserve its characteristics.

What then shall one guide oneself by in producing new varieties by crossing? How does one obtain the necessary combination of traits in the progeny? Genetics provided a precise and scientifically founded answer to these questions for the selectionists: "To cross varieties with the necessary traits, in any way at all; a favorable combination of these traits in the progeny may some day be obtained on the basis of the theory of probability.... The combination of traits - genes - is accidental and does not depend upon any external influences." This proves, of course, that the Mendel-Morgan genetic was of no use altogether and of no advantage to agricultural economy.

It was evident that scientists with advanced views could not accept this system of thought. K. A. Timiriazev, a fervent follower of Darwin's,

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engaged in a decisive struggle with the Mendel theory of genetics. I. V. Michurin proved the insolvency of genetic statements by a reference to his own colossal work performed over a period of 60 years.

The decisive blow, however, was struck by the greatest biologist of our time, the academician T. D. Lysenko. Supported by his brilliant theoretical and practical accomplishments on plant work within the last 25 years, he proved with the utmost conclusiveness the fallacy and reactionary nature of the entire foundation of formal genetics.

The theoretical statements of Lysenko are diametrically opposed to those of the Mendel-Morgan group. They consist in the main of the following:

Nothing within the living organism is ossified, immovable, permanent. Everything moves, changes, correlates with the environment.

The changes provided by such environment (in feeding, temperature, light, etc.), without which the organism may not develop normally, may transform its nature.

The environment which changes the characteristics of the organism in the course of its individual life, transforms its hereditary nature in the same direction.

To change the nature of an organism (i.e. its hereditary characteristics and traits) - means to compel it by a corresponding training to transform its historically established demands for definite conditions of development.

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Such are the basic theories of development, as expounded by Lysenko. And any work of his, any experiment serves as a brilliant proof in support of the accuracy of these principles. The views of Michurin and Lysenko upon the nature of the organic world, based upon the principles of dialectic materialism, alone accurate, have become the foundation of a new and active biology. This science has taken on another aspect in our country, it has become a direct guide in all those fields of our activity where we meet with living nature - from agriculture to medicine. It compels us to view many facts and phenomena in our environment in a new light.

It also makes it necessary for everyone to get acquainted with these fundamentals, to absorb the content of the new views, in order not to lag in the knowledge of advanced ideas in our remarkable times.

It is necessary, however, to also relate how this greatest of scientists began his activities, and how he succeeded at last in destroying the entire structure of reactionary biology that seemed immovable to many.

End of Chapter

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Dolgushin, Iurii. U istokov novoi biologii
[At the sources of the new biology].
Moskva, Gos. Izd-vo Kul'turno-Prosvetitel'noi Lit-ry, 1949.
71 p. 442 D68
Work of T. D. Lysenko.

Translated from the Russian by
S. N. Monson

THE STORY ABOUT A GENUINE BIOLOGIST (pp. 10-42)

Events that strike at the imagination are usually remembered well. That is why I recall that winter evening at Saltykovka, near Moscow, when we at last received a letter from my brother from Gandzha. He had recently graduated from the Agricultural Institute at Tbilisi (Caucasus) and had been assigned to the Gandzha Selection Station at Azerbaijan for work. Here is a brief excerpt from his letter that has been preserved in our family archives and is dated December 20, 1928.

.... "Life is devilishly interesting here. The main topic of conversation is the work of a young agronomist - Lysenko (your countryman, dear mother, also from the Poltavshchina). He has been here for two years and is in charge of legumes, but actually preoccupied with everything even "beyond the program". A most peculiar figure. Tall, thin, always completely covered with soil, puts his cap on with a brisk movement. Has altogether no consideration for himself, his personal appearance. Whether he sleeps, one cannot tell; when we go out to work - he is already in the fields, when we return, he is still there. Forever poking around

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Dolgushin, Iurii. At the sources of the new biology, (pp. 10-42).

his plants, spending his entire time with them. Is most attentive to their needs; knows and understands them perfectly, seems to be able to talk to them and to penetrate into their very souls. Plants "demand", "beg" him for things, fear, love, suffer. This stems, however, not from animism - he is a materialist to his finger-tips - and a real darwinist, besides. Altogether a most remarkable man.

We frequently gather evenings at Igor's or Isaia's - and find our chats with him most interesting. His is a genuine creative mind; new ideas literally gush from him. Each conversation raises in one's mind a whirl of interesting ideas. Carried away by his work, he is incredibly observant. This applies, first of all, to plants, and while it seems that he is not interested in anything else, he nevertheless, notices everything, and is frequently up to-date on the most intimate events at our station, of which he could seemingly hardly have heard.

His ideas are usually startling and paradoxical, but upon further reflection, prove accurate and much to the point. Genetics, for instance, the theory we studied at the institute, he considers to be "harmful nonsense" and claims that success in our work depends upon how soon we shall forget about it and "free ourselves from this intoxication". An experiment is of value to him if it fails

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and leads to a controversy. Igor, as usual, states very seriously that Lysenko is convinced he may grow a camel from a cotton seed and a baobab (Adansonia digitata) from a hen's egg.

Lysenko, it is true, has as yet not attempted such experiments, but here is what he produced in his last work. He established - and this is not subject to any doubt anymore - that all winter plants which, as is usually believed, require winter rest periods in order to bloom and produce seeds in the following year, - actually do not require any such rest at all. They require no rest but cold, a comparatively small amount of reduced temperature, (not below zero).

Upon receiving this amount, they are able to continue their development without any interruption and will produce seeds. This amount of reduced temperature may play its role even if the plant is not a plant as yet, but just a fertilized seed. If, for instance, the seeds of a winter wheat are slightly moistened and kept for a time in the cold, they may be planted in the spring, develop normally and produce a yield during the same summer - as do any ordinary summer crops.

Imagine, my dear one, what this means? The reduction of the vegetative period of plants, the transfer of many crops to the north, and the devil knows, what else yet.

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This, undoubtedly, is an invention of immense scientific significance. Such is our Lysenko. I, naturally, am completely taken in by his ideas and am working with him ...."

I was, frankly, at the time not too well versed in problems of plant growing but upon discussing the problem with my father, an agronomist, I felt that a certain "move" had been made in science, one resembling the slight shock felt before an earthquake that fills man with an incomprehensible, vague and frightening excitement. I well recall that the thing that most struck me in this letter was the possibility of controlling plants at a stage when there actually is no plant at all yet, but only a seed.

Much concerning this invention was not clear to us then. In a short time, however, Lysenko himself stopped in Moscow on his way to Leningrad where he was to address the conference of geneticists, and spent several days with us at Saltykovka. Here we learned first about the blow the young scientist-revolutionary was to deal to the existing foundations of biological science.

One need not think that a quarter of a century ago the 25-year old selector, T. D. Lysenko, had entered the road of science with the intent to create the shake-up we witnessed several months ago. He had nothing of the kind in mind. But among the many traits that drastically set him apart from the large group of other

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scientific workers, were two, in my opinion, fundamental ones, which defined his entire future creative path. Above all else, it was the ability to view the world such as it is.

Only few possess this capacity. To a man who devotes himself to science, it is invaluable. It means - one had absorbed everything one learned in school and books but that knowledge had, nevertheless, not obstructed one's outlook upon the universe, had not colored it in hues of accepted truths and canons. You knew what you had learned but you also saw what there was to see.

To such a person a free and limitless creative path, leading to a greater knowledge of the universe and its laws, is always open.

Lysenko, who had just entered unhesitatingly upon this path, was not prompted by an ordinary distrust of science - there was at that stage no reason for it yet. But his was the freedom from any "scientific" ties, the realistic independence of an intellect who had acquired knowledge and was eager for more of the same.

And another important trait. He grew up in a modest peasant home, at the very source of labor which directly transforms the latter into the "gift of life" - which is bread. He therefore well knew the value of this labor and was aware of what made it productive and therefore joyful. At that stage he began first to resent scholastics, i.e. science that is of no use to practical work and

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is separated from it. He realized that only in labor directed towards work essential to man, truth is discovered and a genuine, valuable knowledge attained that enriches man and makes his work productive.

Recently I heard him say a few words concerning this, "Would one consider it possible for science to be in the following position: theory has produced some achievements, has made a step ahead, but practical work does not benefit from it in the least. I could never since childhood understand how this could be so and I disliked to be told that these - for practical purposes - useless theoretical "achievements" were of some value."

The ability to view the world such as it is, a thorough knowledge, and a complete independence from scientific canons, - in other words, non-prejudice with regard to nature, and a clear understanding of the practical purposes of scientific work - such were the sharp weapons Lysenko brought with him into this field. To this should be added the extreme inclination to aspire to an aim and a positively hunting, impatient passion for work. It shows why he selected the annual field plants as the basic object of his activity - the most important ones for man's existence and the fastest in development, i.e. the most convenient for study.

Lysenko came to Gandzha in the fall. Around stood bare fields, cut by irrigational ditches. Cotton, the basic crop of the area,

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for the cultivation of which this station had been established, had already been gathered.

The young agronomist already possessed some experience in selection work. He had independently produced a new early variety of tomatoes at the Belotserkov station in the Ukraine. Here he was assigned to work on legumes. It was necessary to introduce cultivated leguminous plants. Cotton fields require fertilizing and legumes provide the soil with nitrogen, producing a green mass which may be plowed in as fertilizer. Aside from this, there was need of forage for livestock.

The usual southern leguminous crops - bean (Phaseolus mungo), chick pea, and others, could normally develop only in the summer, at the height of the heat, i.e. simultaneously with cotton. But at that time there was not enough water in the irrigation ditches; cotton absorbed it all and demanded even more. Nor was it possible to take away water from the limited ration given cotton. But without water legumes could not grow.

During the fall, however, from the time of the ripening of cotton, and throughout the winter and early spring, i.e. from September to April, for an entire six months, water was plentiful. Only that beans, chick peas, etc. refused to develop during that period: they were too cold.

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What was there to do?

Lysenko equipped himself, first of all, with all the meteorological data of this area. A lengthy, warm autumn. Three to four certain months. But the winter, well, some two months long, not even that, judging by Ukrainian standards. Frosts had to be expected but, on the whole, there were hardly more than ten days when the temperature dropped below zero.*

Peas had to be sowed in the fall, immediately following cotton. Our ordinary "northern" pea, not the kind spoiled by the Azerbaijan heat, but one accustomed to our short and comparatively cool summer. Here it should feel comfortable during a fall-winter period.

Without losing any time, Lysenko sowed an entire collection of different varieties of peas on the experimental plots; along with these also such other legumes as - Vicia (vetch), Vicia, var. minor Beck., lentils.

The experiment succeeded. The peas and vetch won in competition. In the fall-winter period these immigrants from the north tillered beautifully and produced a green mass that was perfectly suitable for cutting, to be used as hay and for plowing in.

The problem was solved. It remained only to "select" more accurately, using the customary methods of selection, and to slightly "adjust", according to some necessary characteristics, the most suitable varieties of the pea-winner.

* Reaumur ?

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Actually, there was nothing particularly remarkable in this event. Any capable selector in Lysenko's place, would have accepted it as such. And this occurrence would not deserve any mention, were it not for one detail, insignificant at first glance, but as we shall see, leading towards very ominous events.

Lysenko recognized, as did any plant grower of that period, that in selecting varieties of legumes for growth under fall-winter conditions prevailing at Azerbaijan, it was necessary to choose the earliest ripening varieties. No matter how warm the winter at Azerbaijan, it is till colder not only than the Ukrainian winter, but even the Central-Russian summer. One could, as a result, at best place one's hope upon those early ripening northern varieties that were used to get along on a minimum of warm days. Lysenko in making his selection bore this in mind.

Here, - I can't really tell what had next played a part: whether it was intuition or the desire to ensure complete success for his experiment, or yet some doubts, which already at that time may have arisen concerning the accuracy of accepted concepts, - only the agronomist Lysenko decided while experimenting also to sow a considerable number of other varieties, in addition to the early ones, i.e. also the late and medium varieties.

From the point of view of agronomic science, it was sheer absurdity. What could sowings of late varieties produce? It was,

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of course, possible that the winter at Azerbaijan would be particularly warm, which is frequently the case there. In such case the late varieties would have time to ripen. But during an ordinary winter they would not "pull through", being "late".

At that time the theory of the sum (total) of mean daily temperatures was popular among agronomists. It meant the following: Each species had to receive a definite amount of heat in order to go through a full cycle of development. Nor was it difficult to establish empirically the exact amount of heat needed, it meant only adding the median daily temperatures. Such "heat rations" were already established for several agricultural crops. By knowing a required temperature regime of a given area based on meteorological data, one was able to easily figure out which plants could be cultivated in the region and which could not.

The theory sounded sufficiently harmonious and logical, provided results in practice, and no one evidently thought of doubting it.

Lysenko, however, contrary to this theory, sowed varieties of plants in the fall that during a spring sowing in the Ukraine had managed to accumulate their designated "temperature ration" only by the end of summer.

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This happened in the fall of 1925. In the spring the experiment was completed. It showed that success was achieved only because Lysenko had planted experimentally those very "hopeless" varieties and not alone the earlier ones. Contrary to all rules of botanical arithmetic, some of the earliest Ukrainian varieties of peas proved the latest here. The variety "Victoria", a pea which at Belotserkov had always been of medium ripening, came out ahead of the rest. Here, at Gandzha - "Victoria" - when submitted to cool fall temperature and winter cold, bloomed first in the spring and produced a good green mass.

In any event, legume varieties that satisfied the practical demands of the Gandzha region had been discovered and the average selector would have been satisfied with the results. It is true that during the experimental process a small discrepancy had occurred between theory and practical utilization, but surely - every agricultural economy has its share of unsolved accidents. Practical workers are used to come across these annoying divergences of opinions between theory and practice. One should be satisfied to have the problem solved.

The agronomist Lysenko viewed the matter in an entirely different light, however. He was truly glad, even elated, not because he had solved the problem, but because scientific suppositions had not been substantiated in these experiments.

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He walked around his plots of experimental peas, looked at them, squatting for a long time, touching stems and leaves. What had happened to these peas? No error had been committed, nothing been mixed up. Take this "Afghan" pea: during the Belotserkov Ukrainian hot summer it had difficulty in ripening; it had lacked sufficient heat - says science, referring to its Afghan origin. But here it grew in the fall and winter - in even cooler surroundings, and in the summer it was ahead of many earlier varieties.

Why did this happen? Did the variety prove untrue to itself? The rest of the varieties equally failed to perform in the manner they were used to in the Ukraine. The "laws" of botanical arithmetic had not proved accurate. Nevertheless, "a variety is a variety", its characteristics are not supposed to change with changes in the climate - so says science, - otherwise there may be no varieties at all, nor any selection. Only here had occurred a violation of one of the principal, most characteristic traits of a plant variety - that of the length of its vegetative period, i.e., of that which distinguishes an annual plant from a biennial, a summer plant from a winter crop.

If what happened to the peas was right, then science was in error. It meant that the vegetative period of each plant was not a permanent entity.

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Is it possible to also agree with the fact that plant life is entirely subjected to some permanent "mathematical" rules? The plant is a living organism, and as such must react upon changes in the environment in which it lives. It cannot help but adjust to it and to change correspondingly.

In this case - the plants were placed in a new environment, a new climate. What had made them change their life cycle - from seed to seed - in this new climate?

To establish this, meant to find the answer to the problem of what constitutes the life cycle of a plant. To learn why some plants require only one summer to produce a progeny from a seed, others - two summers or several summers; why some are "winter crops", biennials, others, similar ones, - "summer crops".

Lysenko thought about all this while walking around his plots and plantings, crushing as was his habit, a clod of soil in his palm. I don't know when he had acquired the latter habit, but how many times in later years , in the fields of the Odessa Institute, in nurseries, the Gorki Leninskie near Moscow, did I watch him handle a clod of soil resembling a giant wheat grain. It could not but bring to my mind the image of the powerful "earthy" bogatir, Nikula Selianovich (knight of Russian Folklore), who had also derived his giant strength from the earth.

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No one - in the year of 1926 - suspected, of course, that the modest experiments performed with legumes at Gandzha would inevitably expand into a scientific historical event. Least of all the agronomist Lysenko. He had other things to think of. The irresistible passion of a researcher, which had already before, in the Ukraine, slowly taken possession of him, now flamed up with particular strength. These remarkable, unsuccessful, yes, unsuccessful experiments had disclosed a mysterious secret of the nature of plants, which could not be by-passed. To solve it would mean to make a step towards governing the vegetative life of plants. And this in turn would lead to an unheard of period of prosperity of the country's economy.

Lysenko did not conceal his thoughts. He drew everyone who approached him into the net of his logical thinking, compelled them to ponder, search, try to solve the mystery.

This was rebellion. Such thoughts were heresy. Today, after all the events that have taken place in biology in the past few years, we find it difficult to understand "from a scientific point of view", how it had been possible to consider, absurd at the time, to believe that the variety of a plant may, for instance, transform its characteristics because of external conditions; that one may "control" the vegetative period which once for all had been established by nature for every plant.

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No one knew - this has not been written as yet - the tremendous amount of work performed by Lysenko in the course of the succeeding two years. It, nevertheless, was, no doubt, the most significant period in the creative process of the scientist. In those years, possessed by a thirst for uncovering the mystery of a silent vegetative life he saw before him, he first began to formulate some simple statements that proved surprisingly new to science. They were distinguished by that remarkable feature - they revealed what actually was taking place in life and nature.

These formulations kept accumulating and were linked to each other; next began the laying of the foundation of the future structure of a new science, as yet unnamed.

Here is how one of his first formulations was brought into the open. In concentrating upon the study of the vegetative period, Lysenko, first of all, tried to comprehend the very meaning of the term. What takes place in the plant in the course of its life? It grows, develops, vegetates - says botany. The words - grow and develop were synonyms, however. To grow meant to develop, to develop meant to grow. No one had, as yet, carefully penetrated into the very substance of the process covered by these terms. It seemed this had not been considered necessary since everyone understood what was meant. Growth meant it grew larger, formed stems,

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leaves, it bloomed, fruited. This was perfectly clear and only superflous pedantry would cause a scientist to dig further into the problem.

Well, Lysenko knew how to be pedantic when necessary. This was particularly noticeable in his attitude towards the various scientific definitions. Here he became exacting and unreconcilable. A scientific definition of every phenomenon had to be simple, clear and correlated as closely as possible to what it designated in actuality, in nature. Still, this was not the most important point. The main point was to have the definition workable; it should disclose in its formulation the very substance of the phenomenon, reflect the path to its control.

Lysenko contributed a great deal of attention to the formulation of the theoretical conclusion, this weapon for a practical control of nature. As soon as a new idea, new generalizations, presented themselves, he would draw into the work his collaborators, occasional visitors, practical workers, anyone who would come into his field of vision. He would put these questions to them: What is a vegetative period? What is the difference between development and growth? How is one to define what is a variety or a race?

People thought it over, presented their considerations, argued over how to reply more accurately, what words to use. Lysenko

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usually knew the answer to the question, but even if it was offered, he continued to argue over it at length. The formulation was verified in these debates, polished from every angle to acquire the necessary efficacy.

No matter how important an idea was that occupied him, he never kept it to himself but immediately, frequently yet in the form of an altogether raw conjecture, would throw it out to multitudes of people: to think it over, argue, verify it.

He acted thus at the beginning of his scientific activity and this trait remained one of his most remarkable characteristics in scientific tactics.

A vegetative period - growth and development. Is it possible not to notice that this complicated chain of transformation - from seed to seed - consists of altogether different, contradictory processes? The numerical changes strike one first. The seedling grows larger, changes into a stem and leaves, then come shoots, runners, flowers, fruits. The "green mass" of the plant is enlarged in weight and volume. This constitutes "growth", the a ccumulation of cells.

But the life of a plant does not consist of this alone. During the time of its growth it passes through an entire row of transformations and qualitative changes. Some forces step in that call

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forth the appearance of new organs composed of other cells. If, let us say, a small shrub of long, narrow leaves, produced from a grain of a cereal crop, will continue to grow at the expense of the increase of similar cells, it will become larger, thicker, more powerful, but will never produce a progeny, the seed. Actually the following process takes place: for some time the plant is tillering. Then, all of a sudden, comes the moment when all plants of the species enter the booting stage. Some break has occurred. The cells that form the stem are not those that produce the leaves, they are different, of another quality.

The stem keeps growing, amassing and multiplying similar new cells. A spike develops. And oncemore there is a delay, the waiting for something new to appear. Days pass by and some invisible, imperceptible events take place in the organism of the plant which gathers strength for the following step. Then all of a sudden, the field is in bloom, the glumes open and a generous cloud of flying pollen is dispersed by the wind over the fields.

Naturally, that is just what it is; the development of the plant proceeds by individual stages which have to be segregated, individually observed, since they are different. Development is not growth. Growth is a quantitative transformation; development - a qualitative one. One should not confuse this and pile them all

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into one heap. Otherwise one will never make head or tail of the vegetative period. Still it is necessary to do so, since without it one cannot expect to control plants.

How is it that no one until now observed the difference between growth and development? How many times did one see, passing in the fall among fields, a small withered dwarf-spikelet, close to the road, almost under one's feet. The soil beneath it flattened and dry, the leaves torn and wounded by the feet of passersby. It, nevertheless, fulfilled its destination. It had not grown to adequate size but had passed through all the stages that lead to fruiting. It carried two to three sickly fertilized grains. The entire cycle of development had been completed; this dwarf after all had still produced a progeny.

Over there - another plant, also wheat, of the same variety. A powerful shrub of leaves, long, juicy, wide. The soil friable, moist. But there is no spike; an unfertile shrub, merely grass. The development - arrested, while growth had continued; one set of leaves dies off, others replace them.

For the first time in the history of plants, the agronomist Lysenko put some order into them. He segregated the confused ideas and gave them specific formulation. The growth of a seed plant is the increase of its mass which occurs independently, irrespective

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of the kind of organs or characteristics at the expense of which the increase occurs. Development - is the file of essential qualitative transformations of cells and processes which lead to the formation of new organs in the plant throughout its life time - from the planted seed to the ripening of new seeds.

It is clear that in these very qualitative transformations which succeed each other with an unfailing consistency is hidden the mystery of the vegetative period. In order to disclose it, it is necessary to find the causes for these transformations.

How is one to find the causes? What experiment will disclose them? The task was difficult. It was necessary to divide it and segregate the main part for study first.

Science and the multi-century experience of farmers persistently state that the sun and its warm energy in any event are the major factors influencing development. The crafty theory of the "sum of median temperatures" had not been created in vain. Although the recent experiments had demonstrated that there was some error in it, they had at the same time stressed with still greater emphasis the active role of heat in the development of the plant.

In order to establish this role and thus the error of the theory, it was clearly necessary to follow through the individual stages of

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development in various species of plants under different heat treatments, with the rest of the conditions remaining the same. How was one to do that? It all meant that the experiments had to be conducted simultaneously in different climates - (this was all right, there are plenty climates to be found in the Soviet Union) - but in such case the rest of conditions - such as soils, moisture, and thousands of other - would also be different, and would, naturally, equally influence the process and so confuse the cards.

Lysenko found a brilliant way out of this situation. A simple but shrewd manoeuvre, one of those beautiful experiments which enrich the methods of biological research.

This is what it consisted of. A definite set of plants of a variety of species is sowed on the experimental plot, each species and variety on its own. Ten days later an equal set of plots in the same order is sowed right next to the first plots. This had to be continued every ten days throughout one year. The result would show that plants of different varieties, without changing their geographical habitat, without moving, so to say, would get into different climates along with changes in seasons, and would in any event submit to different conditions of temperature.

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After cotton - the principal local vegetative population - the following crops occupied honored places in the chosen set: wheat, rye, barley - all cereal crops. They, naturally, commanded first place in this great work. The country required bread before anything else. Much bread. And since this was so, it was necessary to work first of all with cereal crops.

And so in July, 1926, begins an experiment grandiose for those days. With each decade the work got more complicated, wider, more tense. Lysenko and his collaborators were hardly able to cope with it. It was necessary to prepare the seeds, the soil, mark the plots, attend to the sowing, conduct observations, and constantly take notes of all. Every ten days a new active group of plots of live and demanding clods of earth was added. At the end of the experiment, there would be 36 of these groups. This meant that every individual variety of wheat, for instance, would be required to repeat the entire cycle of its development 36 times in the course of only one year. It would show how each stage developed, (from sowing to germination, from germination to the beginning of tillering, and next - to the booting stage, to the beginning of blooming), in 36 variants, during a yearly steadily changing temperature.

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Lysenko was spending the entire day on the plots. His principal task was to observe, to spot the slightest moves in the development of the plants and to "cut" into the moments at the beginning of the new stages. All these observations were carefully taken down by his collaborators. Lysenko himself never kept any notes. His memory was of the kind that did not require a notebook. No one ever saw it in his hands. But if one asked him when the second leaf had appeared on a cotton of a definite sowing or what variety of wheat had begun to tiller at a higher temperature, he would reply without hesitation. Everything required in working out an idea was greedily absorbed by his memory and preserved there.

He kept a pencil though. Occasionally, an accidental, sharp observation would attract his attention while preoccupied with regular work. Then he would jot down something on his cigarette box, on a piece of board, or even the wall of the nursery. He never glanced at this note anymore but his memory would firmly retain it.

Months passed. Before the searching eyes of the agronomists were - plants, plants, and more plants. Some had just germinated, others opened their first leaves, the third were already in bloom.

Lysenko, thin, his face inflammed, burned a red-grey, which distinguished him from the rest of the workers at the station,

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wearing a dusty Russian blouse and rumpled pants, hovered for hours over his plants. Few among other plant growers could match his ability to do this. But how was one to approach a plant otherwise without peering into its face, touching its rough leafage.

It was important to catch the moment when a turn in the plant took place, a new phase began. Here the formation of the booting stage was about to begin - had it already begun or not?

The event takes place in the very heart of the cereal, at the depth of the tillering "knot" where is hidden the so-called "point of growth", safely wrapped first by tender, transparent layers - the embryos of future leaves, then by firmer capsules of already formed young leaves and, finally, from above - with the strong foundations of adult and old, dying leaf blades.

Lysenko pulls a small shrub of plants out of the soil, quickly tears off unnecessary runners, and leaves and carefully, with the nail of his smallest finger, specially grown for this operation, separates the tender layers one after the other, those hiding the point of growth in the principal stem.

Here it is. A small, white, almost transparent, sharply pointed hill of proper conical from, hardly visible to the eye. In this delicate, tender center of the vegetative organism occur all the mysteries of the plant's development. The cells of its

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tissue constantly separate and stormily multiply; some similar ones change into new tissue, new organs.

When the cereal tillers, transparent layers peel off one after the other from the small conus which later grows into long and narrow leaves. At this stage the tender, grainly and moist surface of the conus is still smooth and even.

Upon the command of some, as yet unknown, forces that control the development, a new "point of growth" begins; the tender, transparent conus will no longer peel off leaves. Another day goes by and on its even surface there suddenly begins to form curved, lateral grooves. This indicates that new organs are forming; the outlines of the future spike are there. These are its embryo. From now on it will grow rapidly, moving up towards booting. Thus begins the new stage: the growth of the multi-spiked stem.

Lysenko destroys hundreds of plants, exposing and studying the point of growth of the main stem. When he moves to another plot, he leaves behind a pile of torn shrubs, leaves, roots, covered with soil.

Gradually the eye and hand get more experienced. By some elusive shades of their green, possibly by the elasticity or rigidty of the leaves, Lysenko senses that a turning point has been reached in the organism of the plant.

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"Would you like me to tell you in advance", he says to his assistant. "These here will tiller. And those will boot. Check it."

The prognosis is confirmed. What happened at the point of growth reflects upon the external characteristics of the plant. The turning point takes possession of the entire organism and acquires a new quality. The sexual puberty in animals takes place in the same manner and an experienced eye will always observe its coming by external symptoms.

In almost all instances and variants it clearly shows that the plant has actually accumulated the heating energy of the sun, in order to proceed towards the next step in its development.

If the sum total of the median daily temperatures at all stages of the development is counted, why doesn't this show? These sum totals are of one kind for a warmer period of the year and are different for a cooler period, although plants of the same species are being compared and the rest of the conditions influencing their development are comparatively alike.

There is no answer to this as yet.

The experiment continues.

Enormous folios are filled with the results of observations. From the laboratory bearing the scientific name - "Laboratory of

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the Thermal Factor" come bearing sounds of the angry snort of the arithmometer, the excited and desperate clatter of cicades and grasshoppers.

In the evening Lysenko manages to look through several special magazines, "bulletins" or published works - in a desire to find in other people's writings something of use, leading to a hint.

And when bedtime comes and eyes stop seeing plants anymore and reading is no longer possible, imagination takes hold. The mental eye visualizes the grain. It has fallen onto moist soil, its coat begins to swell, the moisture approaches the germ which sleeps peacefully close to the very endosperm - the supply of food received from its mother to start out on life's path. It could sleep in this condition for a long time, perhaps many hundreds of years. But moisture slowly penetrates it and touching it lightly, awakens it. It begins to move, grow, requires food...The moisture dissolves a hard lump of food for it.

This is the way life begins. What is most important in the process? Is it moisture? It starts the course of the mysterious mechanism of life. Had it not touched the grain, the latter would have remained dead. No, not dead. Nothing dead can come to life again. The grain waits only for moisture to start life. It can, however, also die. And in such case, moisture will not revive it

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but destroy and rot it. This means that the most important point is in the very nature of the living substance, prior to moisture, something distinguishing it from a dead substance. A constant interrelationship with the external environment is essential to a living object. Moisture comes from without. The germ tears through the grain coat and expels thin feelers. The rootlet moves downward, towards the damp soil, the shoot penetrates the surface to face sun, warmth, light and air. All this is external to the plant. But what constitutes its "inner" life, its independent one, its nature?

Sleep terminates this complicated chain of thoughts on the source of life. But bordering on the unconscious, the active brain continues to search and comprehend in order that at some future date, when awake, or in a recalled dream, the necessary idea may accidentally be called forth.

Debates are going on at the station. Almost daily Lysenko throws out new topics. They vary and not everyone realizes that they all lead to the same:

Can development exist without growth?

Or growth without development?

What is the difference between living and non-living?

What is the difference between environment and conditions of existence?

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In raising the question, Lysenko does not direct it to anyone in particular; his eyes are downcast, he is all preoccupied with his thoughts. And he adds: You may not reply to these. I am not asking for your answer. Think. Solve it yourself and answer it, correcting yourself.

The work continues. More and more facts accumulate. One may already consider wrong the theory of the sum of median daily temperatures and the fact that agronomy in general does not possess a method which permits the definition of the amount of heat essential to a given plant for passing through a stage and the entire cycle of its development. If a new crop has to be introduced in a region, meteorological factors are of no help whatever. Instead, the old, proved and only method - that of testing, sowing several years in succession, is alone valid and provides a solution.

In the meantime it becomes more and more evident that the duration of the stages depend upon heat. Each phase demands its own number of days and its sum of daily temperatures, and the higher the latter, the faster the stages go by and the smaller the total amount of temperature needed. In short, the movement of the stages is speeded up with the increase in temperature. Why should there, however, not be any constant dependence between the speed of the stage's passing and these amounts (total) of heat?

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Lysenko takes the entire "heat" arithmetic under special consideration. Plants cannot be in error, says he. They do not break their laws of development. We, however, are confused all the time; are counting inaccurately, that much is clear.

Facts and observations come to the rescue.

The stream of thoughts and discussions flows into another channel. How to estimate and measure this sun power absorbed by the plant? The tensity of the energy of the sun is measured at the meteorological booth with the aid of an ordinary centigrade thermometer. The count begins at zero, which is the point of the freezing of water, a point that does not have any close, direct connection with the life of the plant. This is biology, not physics. Why should the energy of the sun, indicated in degrees of Celcius within the booth, express the degree of the absorption of this energy by the plant? No, the plants have another scale, and each has clearly its own. There are plants that live, develop, bloom and fruit at a temperature below freezing; while others, who like warmth, perish, are "frozen out" at a temperature of 10° above.

Plants do not start their life processes at a meteorological zero but at a definite special temperature required by every plant and for each of its processes. This is confirmed by experiments.

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Here, for instance, we have the variety barley No. 0264. It does not germinate any earlier than when the temperature reaches to plus 2.6°. It further does not tiller until the temperature goes up to 7.2°. The blooming begins at 9.2°, while the ripening of the grain comes only at 15.6° above zero. This then is the scale of the barley No. 0264. And in reviewing each stage of development, these minimal temperatures represent the zeros, the "biological zeros" of each stage. Here is where the count of the amount of sun energy required by a plant has to be started.

Thus a solution is reached. It immediately shows the error of the theory of the total amount of daily median temperatures. Actually, at plus 10° cotton, for instance, will never germinate, it is too cold. Meteorologists may, in the meantime count ten every day, and gather considerable number of degrees which will actually not play any role in the development of the plant's life.

At plus 15°, cotton germinates in 17 days. At plus 25° - in 5 days. If one counts the total number of degrees of temperature, according to theory, it would appear that in the first instance cotton, in order to germinate required 255°, in the second case - only 125°. Thus, there is no regularity. Here, however, is what one obtains if the degrees are counted not from the meteorological

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but the "biological zero". Nor is it difficult to obtain this zero. A special experiment easily establishes that cotton of a given variety germinates at a temperature not lower than plus 18.83°. This represents the constant point of temperature required at the early stage of development at which this variety of cotton begins to absorb heat energy, turning it into growth energy. It is necessary, therefore, to begin the count from here. It then follows that at a temperature of plus 15°, cotton, in order to germinate, uses only that which exceeds its "constant", i.e. only 4.17° (15° minus 10.83°). In the course of 17 days it will consequently receive not 255° but only 70.8°.

In the second instance: at plus 25°, germination begins in five days. The actual heat ration is naturally increased: 25° minus the constant of 10.83°, produce a daily 14.17°. In five days this represents 70.8°. The same amount as in the first case. This already represents regularity.

A check is made. Everything goes perfectly. The regularity is repeated in the various species of plants and the various stages of their development.

Everyone at the station is elated. These new words - "stages of development", "constants", "degree-days" are heard everywhere and

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enter the agronomic dictionary for the first time. With the discovery of the new regularity, it has evidently become possible, knowing the "constants" of the stages of development of plants, and using the meteorological data of a given area, to foretell definitely how a new crop will develop in an area.

Aside from this, it becomes apparent why plants are sometimes delayed, and wait prior to entering a new stage. They wait for their critical temperature, the "constant", without which the new physiological process cannot be pushed ahead. When it comes, they begin to absorb the warmth and turn it into new organs. This also requires time. Now everything depends upon the amount of heat; the more of it, the quicker the stage is passed.

This calls for a celebration. Some of Trofim Denissovich's associates plan a party, traditional under such circumstances. Lysenko arrives from his plots with a worried air. He does not object to a party but rejects firmly the motives prompting it and would not accept felicitations.

There is no success as yet. This is all nonsense. Even if the regularity is definitely established, what good will it do? Will it aid in reducing the vegetative period of a plant? Not at all. Just as we are unable to regulate the temperature in the field.

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Still, there may be something to be glad about. Our regularity was not substantiated in the matter of the booting stage with regard to winter crops. The matter is evidently not as simple and hopeless. It is necessary to learn why winter crops do not follow our regularity. We are bound to find something of interest here.

The regularity he found, though it reflected closely the quantative side of the process of utilizing heat for plants, did not satisfy Lysenko in it itself. His scale of research was far wider.

He knew how to dissect the most minute details of plant life, and possessed at the same time the ability to present his observations, in the Darwin manner, in a scheme of wide biological generalizations.

Darwin had proved that living forms and species are capable of transformation, i.e. of losing some and acquiring other new traits and characteristics. This is what had occurred in the case of peas and other plants before Lysenko's eyes during his first Gandzha experiment. Darwin had, however, not explained why and how these changes take place in organisms. And Lysenko understood that this problem was now facing him in all its majesty.

That was the time of the loud flourish of the new branch of biology - genetics. The idea of a mysterious "hereditary substance"

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controlling independently and incomprehensibly the life of the organism, its development, characteristics, traits - reigned noisily and supreme in biological science. Mendel's laws that served as a basis for the fundamental statements of formal genetics, which in many cases proved insolvent, received new theoretical support in the artful schemes of the American Morgan. Another American - Muller, caused a "boom" by his discovery of an artificially produced transformation of characteristics on sexual cells by Roentgen rays. The principal and almost sole living object upon which experiments were conducted, the fruit fly, drosophila, filled all genetic laboratories in the world.

What were the aims of genetics?

It is necessary to point out that it was a most complicated manoeuvre on the part of idealistic science, as opposed to the materialistic expositions of Darwin. One could not beat Darwin head-on: his arguments and conclusions were too clear and incontrovertable. Bourgeois science therefore attempted to flank it. Protected by its recognition of Darwin and attempting to imitate at times his materialistic methods of research, it tried to explain in its own way the "mechanism of heredity and transformation" of organisms, i.e. to solve the very problem which Darwin did not have time to solve, and in such manner to fill the principal biological ideas oncemore with lost idealistic content.

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At the time when Lysenko on his Gandzha plots conducted his grandiose experiment with cereals and cotton in order to understand how nature itself transforms the vegetative period of plants, the American Muller was directing his Roentgen light upon the drosophila fly and counting how many monsters there would be in its progeny. The news that Muller succeeded in this manner to speed up the appearance of "mutations" (new traits) in a live organism 150 times, immediately became known in world genetics and were accepted as an important scientific event.

Lysenko, when told about the "successes" of genetics, shrugged his shoulders. He could truthfully not understand why many prominent men among Soviet scientists found it possible to preach genetics and spend time in producing drosophila. Did they seriously believe they could by using radium lights, Roentgen or chemical reactives, discovered in an artificially created laboratory environment, produce regularities in the organism of a fruit fly that would aid breeders of livestock or plants.

His very nature of naturalist-transformer sensed the faultiness of the bases and methods of this science, its formalism, artificiality, detachment from nature, and its doom to futility.

Still at that time Lysenko did not have any reason to become interested in detailed genetics. He simply rejected it because it

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was another sphere of study: genetics solved the problem of heredity, while Lysenko was preoccupied with the individual development of plants, their physiology. And he continued his work, realizing the regularity of nature, working in a close relationship with it, and those dialectic principles that no longer required testing.

He never suspected that actually he had already from the start entered into a controversy with a powerful world and a leading movement which was attempting to solve the problem left behind by Darwin.

The "great experiment" comes to an end. The plants have gone through all yearly temperature variants before the eyes of the experimentors. The life of every species had either begun under a burning heat, ending almost at early frost periods, or, on the contrary, had begun in the winter and terminated in the summer heat, or yet, it had taken place in warm or cold weather.

An enormous quantity of observations, facts, statistical data, material for any number of calculations and controls was accumulated. Valuable data had also been gathered from several other areas of the Union.

All this data proclaimed loudly: the peas were right; the definite duration of the vegetative period is actually not a

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stable and unchangeable characteristic of every species and variety. Under some conditions the plant completes its cycle of development rapidly, under others the same plant demands a much longer period of time. In one climate some plant may ripen in the course of a summer, in another - it does not manage it; waits for the winter and only in the following year forms fruitbearing organs and produces seeds. In other words, it behaves as either a summer or winter crop. Still, the distinction between winter and summer crops had been always considered immovable and permanent for every plant species. It appeared, however, it was possible to identify plants by this characteristic only under definite conditions, in some definite area, in a given climate. Only here varieties preserved their characteristic periods of development. Even at that, this was not always so. In some years when the customary climatic conditions were radically upset, the periods of plant development were also confused. Some got shorter, others - longer. The individual stages of development also varied in their course.

What were the conclusions that could be drawn from all this mass of data and observations?

Lysenko did not for a moment lose light of the basic, leading task ahead. The aim of all research was only one - to take hold of the vegetative period. To control it.

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This task had not been solved in practice in any stage as yet. There was no need to worry, however. The work had not been done in vain.

The heaps of obtained data and observations pass through the brain, as would black ore through a burning furnace where everything is melted and all residue burned, leaving behind only the valuable transparent crystals. Here they are.

The duration of the vegetative period of plants depends also upon the hereditary traits; the nature of the vegetative organism; and the influence of the external environment, the climate, the weather. The less these conditions satisfy the natural requirements of a plant, the slower will it develop, the longthier will be the period from sowing to the ripening of new seeds. Should some environmental conditions not suit the nature of a plant altogether, it may not be able to go through its full cycle of development, will not bloom, fruit or produce seeds. This is what the observations, research and experiments had proved.

It would seem at first glance that there is nothing new in this and that it hardly justified research carried on for over a year. But Lysenko knew the value of this simple and clear data. It shed a new light on the path ahead and it swept away the fog of faulty viewpoints.

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Science was not aware of it as yet, but it actually seemed that the laws governing the development of the plant were far from immovable and independent, as man not acquainted with the facts and life itself would believe it. The vegetative period of any plant is clearly connected with some factors that lie outside of its organism and in surroundings in which it lives.

This cannot help but be so. Long ago, in pre-historical times, under some conditions, living matter was formed from non-living ones. No one knows how this occurred and science has not disclosed this mystery until now. But this is an axiom of the dialectic materialism, one of those foundations which provide it, in contrast to idealistic science, with a remarkable activity, the strength of an infallible penetration into the very essence of the nature of things and phenomena.

In this instance the gist of the matter consisted in the fact that the living proved actually different from the non-living matter. Wherein lies this difference?

Any non-living body, be it a stone, metal, dry wood - can be preserved if isolated from the influence of all factors of external surroundings - air, light, moisture, etc. The living matter, however, perishes under conditions of such isolation and stops to

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live. It has to be fed, must breathe and assimilate the mass of diverse factors in the external environment. Only then does it remain what it is - a living matter. This applies to all creations of an organic nature - to all plants and animals; there are no exceptions.

It follows that the principal point one may achieve and comprehend is that the term "living" is not limited to the body alone. To regard it as a living body alone - is the point of view of the man in the street. But here speaks science, biology. It deals with the comprehension of the causes of those processes from which life's movement and the changes of the organism are formed. It follows that one may not remove the organism from conditions that define its existence. It is necessary to widen the understanding of organisms and to view the conditions as a whole entity, a united complex. This then will be dialectic unity.

To acquire such understanding is no simple matter. There is no other path, however, since the conditions of existence harbor the causes that direct the development of the organism, its relation to the external world. And if the living organism is examined philosophically, i.e. as a dialectic entity, its body has to be accepted as a form of this entity, while the conditions of its

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existence will represent its content. The organism is not only "connected" with the external material conditions of its existence but it consists of them, is created by them, it builds its body from them.

It represents sort of a coagulum (clod), of these conditions, absorbed, transformed for its own purpose and changed into organs of its body.

These were the complicated and varied ways along which Lysenko strove towards his aim.

Exhausting labor in the fields, on the plots, under the burning Azerbaijan sun, so different from the friendly Ukrainian sun, estimates at laboratories; magazines, books....And simultaneously - uninterrupted creative work of the mind - a severe, critical appraisal of every new link of the logical, biological chain, penetrating at one end into depths, into the philosophical origins of the concepts of nature, at the other end, ever uncompleted, reaching into the future.

The agronomist Lysenko made a stupendous discovery as the result of the vast experimental work conducted over a period of two years. The duration of plant life is not a steady characteristic of the species, it can change under the influence of external conditions.

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I fear that the word "stupendous" may appear exaggerated to the reader. We have in our Socialist years stepped so far ahead from the concepts that prevailed only some twenty years back, that it is difficult to estimate the effect such a statement, this truly amazing and new discovery, made upon men of science.

One hundred years ago Russian society was equally startled by the language of Pushkin, the simple and beautiful Russian language of "Eugene Onegin", and "The Captain's Daughter" which continue to serve as an example to this day, not easily approached. At that time it was, however, so incredibly new and unusual in Russian literature that it provoked fury in some and admiration in others. It is not easy to understand today what had so shaken the people in those days. Pushkin had actually not discovered anything, not invented any new language. He had taken the ordinary, common language, understandable to the people and spoken by educated men, and introduced it into literature where another special language, foreign and alien to the people, prevailed at the time, a language mutilated by foreign archaisms, outlived long ago. Pushkin opened the eyes of Russian progressive society to the virtues of its own contemporary simple language and thereby destroyed the wall that separated the people's language from literature. The "shock to accepted foundations" consisted in just that.

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Twenty years ago a similar situation prevailed in science. Agricultural practice knew long ago and had always considered that the duration of the vegetative period of plants was a most uncertain quantity. But that was practice. It is difficult to believe today that in those days a breach between science and practice was not alone considered permissable but was accepted as a regular occurrence. "Practice" was one thing, "science" another. Science was supposed to define "pure" principles which could in practice be broken by various circumstances, impossible to foresee.

This applied, of course, to that prevailing formal and bureaucratic science against which genuine advanced scientists always led a bitter struggle individually.

And this science proclaimed that "natural characteristics" of plants could not be changed. New forms and varieties of plants were therefore not created but raised, i.e. various forms were obtained from the existing material or results of ordinary crossings.

Living nature - the world of animals and plants - was considered unalterable, permanent and steady. Whenever some newcomer would raise the question - how is one to reconcile this permanence with Darwin's theory of the evolution of the species? - he was authoritatively told that there did not exist any permanency from the standpoint of evolution. As the Greek saying goes - "everything

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flows.....". These changes take place very slowly and millions of years are required to notice them. Evolution takes place in hundreds of millions of years....

In any event, in the course of many generations of people, species of plants and animals were viewed as non-changeable in practice. As to the establishment of new forms, so well known to the farmer and breeder, science explained these facts (collected and described by Darwin in quantities) as accidental and "irregular" deviations, to which genetics had applied the term of "mutations" but without explaining the substance of their origin.

In this sense Lysenko's conclusion with regard to the non-stability of such steady trait in a plant variety, as is the duration of its life, was actually a "shock to the foundations". Although his discovery represented only the confirmation of a well known fact, of which the causes and content had to be discovered yet.

He had, nevertheless, come upon the right trail. Winter crops refused to submit to regularity in utilizing heat, as did other plants. What did this mean? Only one thing. If one knew the reason for this unsubordination, one would learn the causes upon which depended the duration of the vegetative period.

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Nature never errs, said Lysenko, and used to add - because it has no brain.

It followed that winter crops also submitted to a definite biological regularity which expressed itself differently in their case, in conformance with their specific nature. To reveal their specific relationship to heat would lead to the very "mechanism" of the reaction of heat upon a plant.

Here a new research "epopee" began. At first a long chain of logical pertinent conclusions. What distinguishes winter crops from other plants?

Only the fact included in its very name was clear. Winter crops are plants that have to be sowed not in the spring but in the fall, close to winter. Seeds will germinate in several days, fields will be covered with young clumps of lengthy, narrow leaves, then frost will intercede, growth will stop and snow cover the young shoots. In the spring, as soon as the snow is cleared, the plants will continue to tiller, root and will enter the booting stage in the summer, and produce riponed seeds towards its end.

If winter crops are sowed in the spring, they will germinate equally fast but their development will stop right there. They will never enter the booting stage, will not fruit, no matter how

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warm and long the summer. And only the approaching winter will again move the process of development and the plants will produce seeds as usual in the following summer.

Many researchers had tried for a long time to establish the reason for this particular trait possessed by winter crops. They require the winter, that much is clear. But why? What is it that they specifically require in the winter? Here there were divergent views. Some believed the plants needed frost and freezing. Others that they required a definite period of rest, a temporary interruption in their development. The third considered that cold in general was needed. No one, however, got to the bottom of it.

In Lysenko's large experiment there had also been winter cereals. They had conducted themselves strangely. The notes permitted the tracing of the "biography" of every variety in all the variants of the year, repeated every ten successive days. Here is one of the winter varieties.

Its sowing, done in the course of the winter, (this had been possible under Azerbaijan conditions) had led to the plants normal tillering with the arrival of the warm weather. Another sowing, made on February 20, (that is almost in the spring), tillered

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successfully a month and a half later. In the third one, however, planted on March 1, there was something the matter with it. It did not tiller as the succeeding sowings had done in the spring and summer. This indicated that within that specific ten days of late February, some changes had taken place in the external environment, in nature, which had deeply affected the organism of the plants. The latter had not received something that was essential to their normal development.

An identical crisis occurred among several other varieties of winter cereals. Only in every variety the critical ten days had occurred at another time. In some instances earlier, in others - later.

As a result, some varieties, which required that they be sowed close to winter, i.e.,the "classical" winter crops of the northern regions of the Soviet Union, had tillered here, when sowed in early spring; had behaved,in other words, as summer crops. While some summer crops, of late varieties, planted in the fall, close to the Azerbaijan winter, had not differed from the regular winter cereals at all. They had spent the winter in the field and begun to tiller in the summer at the regular time. Late summer crops had changed into early winter crops.

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The entire complicated data of contradictory and confusing facts, which ordinarily it would have taken many years to solve, proved a source for necessary conclusions to Lysenko. They almost led him to the final solution of the mystery of the vegetative period.

It had become evident, in the first place, that the characteristic of a winter crop which had always been considered a permanent and unchangeable trait of a variety of a plant, actually depended entirely upon conditions under which its development was taking place. This produced another serious refutation to be introduced into agricultural science. One could also recommend that the science of genetics cross out from its list of genes the winter "gene".

Secondly, it was clear now that the trait of wintering belonged to the same chain of early ripening and late ripening, i.e. that all of these belonged to one order and were only different quantitative expressions of a single physiological process. There are no varieties of plants that are generally winter or summer plants, early or late. In a definite area, i.e. for definite conditions of growth, all varieties will be different: some will act like summer crops, others like winter crops, some early, others late.

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It was further also possible to understand from this experiment what specific conditions the organisms of a winter plant required.

The supposition that winter crops require a period of rest could be discarded at once since in early spring periods of sowing (February 20, for instance), the winter wheat had reached the booting stage without any delay, following an uninterrupted development.

Also refuted was the supposition concerning the necessity for freezing; the temperature had in those cases not gone below zero.

There remained only one point. The plant had required cold, a low temperature but not below zero. That meant that it did not need a winter of frosts which would stop the plant from developing and require it to wait for more propicious weather, but that it required fall or spring, possibly both, and in any event, a certain amount of cold weather.

Now Lysenko was convinced he was on the right path and decided to tackle a concrete practical problem, one most unusual in science for that time: to compel any winter variety to tiller at a customary spring sowing, within one summer i.e., to act as a summer crop.

The succeeding work and all further considerations were concentrated and developed with the solution of this problem in mind. It

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remained to establish: when, in what amount and how to provide winter crops with the necessary cold.

The longer the complicated results of the series of experiments were thought over and discussed, the clearer became the biological picture of wintering. Plants require cold at one of the early stages of development that precedes their booting. Only under the influence of a reduced temperature some bio-chemical process takes place at the point of growth which determines the further development of the booting and organs of fruiting.

The process is not accompanied by any visible changes. At least, it had not been possible to notice any.

When does this period occur, this important stage of development upon which the future of the plant depends?

Lysenko knew from experience that in some cases, winter crops sowed too late in the fall do not have time to germinate by winter (spending it underground) and germinate only in the spring when it is warm and the snow cleared. This, nevertheless, does not prevent them from tillering in the usual time. This meant that the invisible stage may take place even prior to tillering, even in seeds that had hardly had time to grow.

All premises were at hand for the last decisive experiment. It was necessary to hurry: it was already February (1928) and the

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experiment required not alone the spring season but also snow which occasionally fell but melted quickly.

There was no refrigeration at the station. A primitive icebox was quickly fixed up by digging a medium size hole (meter x meter), filling it with snow and carefully covering with straw.

The seeds of different varieties of winter plants - wheat, rye, barley, - were regularly moistened in their respective bundles made of cloth; were grown in the laboratory and dug into the snow every five days. This was continued until April 10, at which time the last bundles of every variety were placed under the snow cover. On April 15, all bundles were withdrawn and the contents of each sowed on separate plots.

It remained to wait and observe how the various doses of cold had affected each variety. These doses numbered from 5 to 55 days of continuous cooling at a temperature of close to 1-2° above zero.

Six weeks later everything became clear. Lysenko's suppositions were billiantly confirmed. All varieties that had participated in the experiment revealed their individual specific secrets one after the other. It appeared that the mysterious stage of development, unrevealed in external changes, takes place in different varieties at different degrees of cold. One variety that had

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been cooled no less than 20 days began to tiller on plots where its seeds were sowed; the other variety had required 36 days of cooling, the third - 51 days.

These were the real characteristics of the varieties, established by nature, those doses of cold that were required from its external environment by each species or variety of plants in order to proceed with its development.

Man, for the first time in history, could afford to cross out "winter" in the biography of any winter plant. In determining its requirements of cold ahead of time by the above method, a plant could be provided with cold in exactly the amount it needed, independently from the weather, under artificially created conditions, in the shortest time. Having passed this stage, the plant not longer required any cold. On the contrary, it now needed a high temperature. And once sowed in the field under ordinary conditions, it went through its cycle of development uninterruptedly, rapidly.

Another circumstance was also established: the necessary dose of cold could with equal success be given the whole grain as the germinated grain, within which the germ had hardly come to life from the moisture, before it even had torn its coat. This was of importance to sowing.

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Thus vernalization was discovered.

The word when first used by someone unknown was widely and willingly caught up by the Soviet people. It gave its name to the stage of development and the practical agricultural method.

Lysenko informed his father, a collective Ukrainian farmer, of the new method without delay. In the spring of 1929 the old man, Denis Nikanorovich, gathered into bags the seeds of the winter wheat "Ukrainka", buried them under snow and after keeping them there the necessary time, sowed them in the field. In the summer the entire collective farm community of the Ukraine learned about this "magic" - a winter wheat, sowed in the spring, had not only tillered, but produced 24 centners of grain per hectare.

However, I have gone ahead some. Three months prior to the time that the old Lysenko began burying his "Ukrainka" seeds in the snow, another event had occurred, concerning which one looks back today with a sense of guilt and shame.

The results of Lysenko's enormous 3-year work were already so significant that he decided to bring them to the attention of the scientific world. In the early winter of 1929, Lysenko went to Leningrad to attend the All-Union Genetic Conference where he reported modestly but clearly about his discoveries.

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One would think that these luminaries of science would acclaim his new, brilliantly proved ideas. Or one could expect them to enter into open discussion in an attempt to disclaim them. Nothing of the sort happened. In answer to his report Lysenko heard a condescending babble, telling that the work was, of course, most interesting but that the conclusions obtained at Azerbaijan may not suit other areas.

The pillars of reactionary science applied one of their characteristic methods of combat - they "ignored" Lysenko's report.

It was his first encounter with the adversary which indicated that in this struggle other methods had to be used.

He returned to Gandzha and continued his research, penetrating deeper into the very substance of the biological nature of plants, without for a moment losing out of sight the practical, economic meaning of everyone of his steps.

He subsequently established that the discovered stage of vernalization is inherent not alone to winter but also summer crops, i.e. generally all field crops. The difference consisted only in that the summer plants pass the vernalization stage, as essential to them prior to booting, at a much higher temperature then do winter crops. They usually find this temperature in the spring, immediately after sowing. Therein lies the only differ-

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ence - in the various requirements with regard to temperature at the early stages of development.

A detailed research of these temperatures was begun immediately. It was disclosed that each species of plants had its optimal temperature, at which the stage of vernalization proceeds in the shortest period.

It finally became clear that the greatest economic effect is obtained from the vernalization of summer cereals. It reduces their vegetative period, permitting them to ripen before the appearance of the summer dry winds, which indirectly leads to an increase of the harvest.

Such was the first phase of Lysenko's scientific activity. Judging from his tasks, he was fully preoccupied with the study of the substance of the vegetative period plants, discovered the stage and methods of vernalization. He also, to all appearances, had touched upon the physiology of plants.

Actually, however, the content of his work was much wider. The discovery of vernalization laid the foundation of the deepest theory of the stage development of plants in general biological significance. The proof of the non-permanency of the vegetative period, of wintering and summering, the definition of the meaning (substance) of development, the concept of the plant as a dialectic

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unit conforming to the conditions of its environment, and hence the role of these conditions as a means to control the development of the plant - these new concepts were being laid as the foundation of a new science - agrobiology.

They were at the same time directed towards the origins of the reactionary formal genetics, though they seemingly developed on the plane of physiology and did not touch upon heredity.

One may truthfully assert that in this period alone Lysenko accomplished more than anyone else since Darwin's time, towards solving the problem inherited from Darwin, with the exception of Michurin, concerning whom Lysenko did not know at the time.

In that period the inner character of Lysenko was formed as well, that of a scientist of the new communist type. The most prominent characteristic of his scientific methods remained, however, in the remarkable harmony in combining the two origins - theory and practice, logic and realization, which forever were united within him into a beautiful and extremely powerful dialectic unity.

I consider that aside from his remarkable ability to absorb knowledge, this may be regarded as the source of his amazing successes, since therein lie not only method but also tactics.

Of successes there were many.

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The vernalization of cereal crops provided the Soviet Union in 1940 with an additional 15 million centners in yields. The summer sowings of potatoes provided, for the first time in history, the southern regions with healthy potato crops and stopped their transportation from the north forever. The "chekanka" (top pinching) of cotton is being applied in all his sowings and has increased the yield of high-grade fibers by 10-20 percent. Inter-varietal crossing had increased the yield of cereals by 5-10 percent. The nest method of sowing kok-saghyz permitted a considerable expansion of the production of the native kacutchuk. Sowing over stubble has first introduced the cultivation of winter wheats in the Siberian steppes.

The list is far from complete. But which scientist, what country can boast of such successes. And how miserable, compared to it, are the attempts of the Morganists who have not been able to offer anything of value to a native economy.

Lysenko raised and headed the mass struggle of the Michurin biology against the Morganist devilry. It was conducted over a period of twenty years and knew many severe battles. The last one culminated in the destruction of Morganism and laid the foundation of a new epoch of unheard of progress, not alone in biology but in the entire field of Soviet science.

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An immovable choking heat had blanketed the capital for many days. The air was heavy and humid, grey clouds appeared constantly over the horizon and slowly passed it by. One waited daily for a storm to break the heat but it never came.

On the last day of July the Lenin Academy of Agricultural Sciences opened its session in the large, two-story-high hall of the Ministry of Agriculture. It planned to discuss the problem of the position of biological science. In the evening, in a crowded hall, the president of the Academy, the laureate of the Stalin award, the academician Trofim Denissovich Lysenko appeared on the platform. He was to report on the principal problem.

It was a conclusive and consistent treatise concerning the Michurin biology and at the same time a fierce, accusing speech against reactionary genetics.

At the beginning of the report one could already feel a current of air within the hall. It came circling from above, from the wide, tall windows, dressed in long folds of drapes.

"The Mendelist-Morganists cling to everything outlived and considered wrong in Darwin's teachings, they reject the living materialistic kernel of his theory",...was heard from the platform.

"We are convinced that the basic statements of the Mendelists-Morganists are faulty. They do not reflect living nature and represent metaphysics and idealism,..."

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The cool currents of air became stronger; the enormous drapes were carried upwards by the wind and spread dust into the hall from window frames that had not been opened for a long time.

The storm had struck.

"This is infamy... close the windows", called out one of the "pillars" of genetics, who sat in front of me.

No one came to his support. He went out, demonstratively marching loudly on the parquet floor.

"A fresh wind is blowing", called out a cheerful, bracing voice provoking subdued laughter.

A storm of unusual strength broke that night over a large area. It was accompanied by lightning and a downpour of rain. Many hardly remembered such lengthy lightning strokes.

At the end of the session, I drove out of town along the road. Traces of the past storm were seen all over,-torn roofs of houses, felled telegraph poles, and further down - where the forest began, I noticed many large, rotten trees, dug up by the storm. The air was fresh and clear; breathing came easy.

Honestly, this symbolic picture has not been invented by me. One could really believe that nature itself had participated in the great events that were taking place in biological science at the time.

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Everyone who attended this session, which will pass into the history of science, will surely remember the "fresh air" blown into the hall of the Ministry, and the storm that passed that night over the capital.

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End of Chapter

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Rubtsov, Ivan
The Appearance of a Form of Domestic Fly Resistant to DDT, as a result of a 3-Year Application of Insecticide.
Priroda, 1948 (4): 62-63. April, 1948
410 P933

Translated from the Russian by
S. N. Monson

The workers of the Institute at the sanitarium (Institute Superiore Sanita) at Rome, Italy were presently faced by the problem of controlling the spread of a new form of domestic fly, resistant to DDT, which appeared following a 3-year, systematic, and most careful application of an insecticide at one of the large suburban livestock farms near Rome.

I had the opportunity to acquaint myself on the spot, on the farm, with the conditions under which the experiment took place, talked to Professor Missiroli, who directed the entire work, and with his collaborators who carried out the treatment.

This experiment and its results have an actual practical significance for us as well and are of considerable theoretical interest besides.

On an isolated farm, situated at a distance of about 30 km from Rome, where some 1000 cows are housed in a special assemblage of buildings, it was determined to get rid of flies for sanitary reasons. Following the first amazing successes obtained with DDT, they decided to use this insecticide.

The first experiment, aiming at a complete destruction of flies on the farm, was staged in 1944. The insecticide was applied in all the pens, on all animals, floors, the outside surfaces of troughs, poles, all kinds of bracings, as well as the rest of the buildings, pigeon coops, pig pens, down to the quarters of laborers and their immediate surroun-

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Rubtsov

The object was to destroy the flies completely on an area of several hundred hectares, and every square meter where the appearance of flies could be expected, was therefore thoroughly gone over. Simultaneously, another aim was set, that of destroying the mosquitoes. The section where the farm was situated had been suffering from malaria from time immemorial.

Several days after application, the aim was apparently reached; nowhere was there a fly to be seen, nor any mosquito. The staff members of the Institute of the sanatorium, as they now tell, celebrated in 1944 their victory over the malarian mosquito and the domestic fly, and dreamed of spreading their experiment over the adjoining areas, cherishing the hope to free themselves in the future of these two plagues of man. In the following year, that of 1934, the adjoining areas were submitted to an equally complete treatment.

However, in 1945, in the places of the previous year's application of the poison, individual flies were observed. Another complete and all-over treatment of the same DDT was applied in the places where the fly makes its appearance. Several days later flies again became a rarity here but, to the amazement of the personnel, the disappearance of flies was not complete this time, as it had seemed to be the case in 1944. In 1946 there were already a great many more flies here than in the preceding year. A complete application of the poison, using the same method, was used throughout the area for the third time, but now the results were definitely unsatisfactory. Only a small number of flies perished and a considerable number of them survived. A study was begun in connection with a natural and reasonable suspicion of the existence of a new fly, resistant to

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poison. Laboratory tests confirmed this suspicion. "The new flies" did not perish from the usual dosages. Having spent several minutes on pure poison, they perished in parts, while others recovered as soon as they were removed from immediate contact with the poison.

I had the opportunity to visit the farms in 1947, on the 2nd and 3rd days following the pulverization with the customary deadly mixture of poison (kerosine plus 5 percent DDT). As had been the case the day before, a multitude of flies was still around, nor did they exhibit any traces of poisoning.

Professor Missiroli was extremely perturbed over the situation. There were already indications of the spread of this form of fly, resistant to poison, in the adjoining areas, which had been cleared of flies following the first application of DDT.

The appearance of forms of insects resistant to poison, is not new. Literature points to over ten similar cases with respect to coccidia, butterflies, and other insects. (See: W. S. Hoygh - Colorado and Virginia Strains of Codling Moth in Relation to their Ability to enter Sprayed and Unsprayed Applies. J. of Agr. Res. 38, 245-56, 1934.)

If the mechanism of the appearance of this resistance is not clear as yet, and it surely has an explanation of its own in every case, the general picture of appearance seems to follow this pattern.

In the usual population there are individual species, resistant to poison or distinguished by a conduct that permits them to avoid poisoning. They are less capable of "competing" and are under normal circumstances very rare and may practically not be taken into consideration. At a mass destruction of species possessing a normal resistance to poison, the

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species of rare resistance, however, propagate without rivals more intensely on the freed living arena.

The repeated treatment with poison only accelerates the results of this artificial selection (to resistance to poison).

The speed with which the differentiation of the new form from the mixed population is taking place is amazing. The severity of the artificial selection has a positive significance - almost all non-resistant species were exterminated. Thus, the more thorough the treatment with poison, the earlier appears the new form. This was equally observed in the USA with regard to the California scale insect and other pests.

It is of interest to point out that a similar form of domestic fly, resistant to DDT, has been also discovered in Sweden.

The existence within a species of forms highly resistant to DDT, is most unusual, taking into consideration the extremely high toxicity of the poison affecting an entire group of insects: beetles, flies, Hymenoptera, etc. The mechanism of resistance, as well as the mechanism of the toxicity of DDT, remain as yet not clear. The understanding of the fact is connected here with the structure and the processes in the cuticula and the nervous tissues of the insects which until now are, as has been established, very weak. Further study in this direction is likely to shed light on a great deal more. It still remains not clear how forms resistant to poison could have developed in the population. This stability cannot be explained (accepted) as the product of unexpectedly developed mutations.

The factor of stability to poison represents too complicated a mechanism to be interpreted as a spontaneous and suddenly developed

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mutation. It is much more natural and likely to assume that the factor of stability to poison, developed in a part of the population is a gradual, historical adaptation that accompanies it in certain circumstances. But in such a case we have to accept the existence of corresponding external conditions, i.e. at least the periodical and local existence in the sphere of the flies dwellings (manure, for instance), of organic combinations that are analogous to DDT in the reaction upon the organism of the insect.

End of Article

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Transl. ~~from~~ Entomology

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The object was to destroy the flies completely on an area of several hundred hectares, and every square meter where the appearance of flies could be expected, was therefore thoroughly gone over. Simultaneously, another aim was set, that of destroying the mosquitoes. The section where the farm was situated had been suffering from malaria from time immemorial.

Several days after application, the aim was apparently reached; nowhere was there a fly to be seen, nor any mosquito. The staff members of the Institute of the sanatorium, as they now tell, celebrated in 1944 their victory over the malarian mosquito and the domestic fly, and dreamed of spreading their experiment over the adjoining areas, cherishing the hope to free themselves in the future of these two plagues of man. In the following year, that of 1934, the adjoining areas were submitted to an equally complete treatment.

However, in 1945, in the places of the previous year's application of the poison, individual flies were observed. Another complete and all-over treatment of the same DDT was applied in the places where the fly makes its appearance. Several days later flies again became a rarity here but, to the amazement of the personnel, the disappearance of flies was not complete this time, as it had seemed to be the case in 1944. In 1946 there were already a great many more flies here than in the preceding year. A complete application of the poison, using the same method, was used throughout the area for the third time, but now the results were definitely unsatisfactory. Only a small number of flies perished and a considerable number of them survived. A study was begun in connection with a natural and reasonable suspicion of the existence of a new fly, resistant to

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poison. Laboratory tests confirmed this suspicion. "The new flies" did not perish from the usual dosages. Having spent several minutes on pure poison, they perished in parts, while others recovered as soon as they were removed from immediate contact with the poison.

I had the opportunity to visit the farms in 1947, on the 2nd and 3rd days following the pulverization with the customary deadly mixture of poison (kerosine plus 5 percent DDT). As had been the case the day before, a multitude of flies was still around, nor did they exhibit any traces of poisoning.

Professor Missiroli was extremely perturbed over the situation. There were already indications of the spread of this form of fly, resistant to poison, in the adjoining areas, which had been cleared of flies following the first application of DDT.

The appearance of forms of insects resistant to poison, is not new. Literature points to over ten similar cases with respect to coccidia, butterflies, and other insects. (See: W. S. Hoygh - Colorado and Virginia Strains of Codling Moth in Relation to their Ability to enter Sprayed and Unsprayed Applies. J. of Agr. Res. 38, 245-56, 1934.)

If the mechanism of the appearance of this resistance is not clear as yet, and it surely has an explanation of its own in every case, the general picture of appearance seems to follow this pattern.

In the usual population there are individual species, resistant to poison or distinguished by a conduct that permits them to avoid poisoning. They are less capable of "competing" and are under normal circumstances very rare and may practically not be taken into consideration. At a mass destruction of species possessing a normal resistance to poison, the

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species of rare resistance, however, propagate without rivals more intensely on the freed living arena.

The repeated treatment with poison only accelerates the results of this artificial selection (to resistance to poison).

The speed with which the differentiation of the new form from the mixed population is taking place is amazing. The severity of the artificial selection has a positive significance - almost all non-resistant species were exterminated. Thus, the more thorough the treatment with poison, the earlier appears the new form. This was equally observed in the USA with regard to the California scale insect and other pests.

It is of interest to point out that a similar form of domestic fly, resistant to DDT, has been also discovered in Sweden.

The existence within a species of forms highly resistant to DDT, is most unusual, taking into consideration the extremely high toxicity of the poison affecting an entire group of insects: beetles, flies, Hymenoptera, etc. The mechanism of resistance, as well as the mechanism of the toxicity of DDT, remain as yet not clear. The understanding of the fact is connected here with the structure and the processes in the cuticula and the nervous tissues of the insects which until now are, as has been established, very weak. Further study in this direction is likely to shed light on a great deal more. It still remains not clear how forms resistant to poison could have developed in the population. This stability cannot be explained (accepted) as the product of unexpectedly developed mutations.

The factor of stability to poison represents too complicated a mechanism to be interpreted as a spontaneous and suddenly developed

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mutation. It is much more natural and likely to assume that the factor of stability to poison, developed in a part of the population is a gradual, historical adaptation that accompanies it in certain circumstances. But in such a case we have to accept the existence of corresponding external conditions, i.e. at least the periodical and local existence in the sphere of the flies dwellings (manure, for instance), of organic combinations that are analogous to DDT in the reaction upon the organism of the insect.

End of Article

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Translated from the Russian by S. E. Mon

DECREE of the Council of Ministers of the USSR and the Central Committee of the Communist Party (V[illegible]). (with map of area of Tree Shelter Plantin[illegible]

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Translated from the Russian by
S. M. Monson

The Council of Ministers of the USSR and the Central Committee of the VKP(b) recognize that the frequently recurring droughts and dry winds ("sukhovei") in the steppe and timber-steppe regions of the European part of the USSR, cause considerable damage to the agriculture of these regions. Science has proved, however, and the experience of progressive collective and state farms, the MTS, and regions has confirmed that with proper practices it is possible to obtain high and stable crop yields and create a firm forage and feed base for the development of livestock. To achieve this, beginning 1949, it is necessary for all collective and state farms of the steppe and timber-steppe regions to adopt the agricultural system based on the teachings of the most outstanding Russian scientists V. V. Dokuchaev, P. A. Kostichev and V. R. Williams. These measures, known as GRASS ROTATION SYSTEM IN AGRICULTURE, consist of the following:

a) the planting of protective forest belts on watershed divides, on boundaries of crop rotation fields, on the slopes of gullies and ravines, on the banks of rivers and lakes, around ponds and reservoirs, also afforestation and stabilization of sandy areas;

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b) the proper land planning and introduction of cropland and meadow land rotation with perennial grasses and legumes and the rational utilization of arable lands;

c) a proper system of tillage, proper crop management and primarily the widespread use of summer fallow, fall plowing and early disking of stubble;

d) the proper system of application of organic and mineral fertilizers;

e) the use of certified high yield seed varieties suitable to local conditions;

f) the development of irrigation utilizing local runoff by means of ponds and reservoirs.

The above indicated methods constitute dependable means of combatting droughts. They will help in increasing the productivity of soils, develop higher and more stable yields, stop wash - and blow out of soils, stabilize shifting sands and be conducive to proper land use. This system will at the same time, offer the possibility of developing a diversified agriculture with proper relationship between field crops, livestock and other branches and ensure a significant increase in production.

On the fields of the Scientific-Research Institute of Agriculture of the Central Black Earth Belt, named after V. V. Dokuchaev (the former Kamenno-steppe experiment Station), where this agricultural system had

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been most fully adopted, yields of grains were doubled within a short time and have reached an average of 20-25 c/h. Even in the particularly dry year of 1946, the fields of the Institute yielded 16.5 c/h of winter wheat, 15 c. of winter rye, 10.6 c. of summer wheat, 15.8 c. of oats and 21.2 c. of sunflower, while grain yields at adjacent collective farms were 3-4 times lower. At the state farm "Giant" of the Rostov province, where proper grass rotation system had been adopted and over 600 hectare of forest shelter belts been planted, a high yield of cereal crops was produced every year. The average yield of winter wheat on fields protected by forest shelter belts exceeded 25 c/h.

The collective farms of the Salski region of the Rostov province with 2,600 hectares of tree shelterbelts, obtained significant successes upon adopting grass rotation and using sound agricultural methods. Their production in the drought year of 1946 averaged throughout the region yields of 15.6 c/h., while individual collective farms of this region obtained even an average yield of 18 c/h in cereal crops.

The collective farms of the Stalingrad province, named after Kaganovich, the Chapaev, "Bolshevist Banner" farms, etc., served by the Leninski MTS, upon adopting grass crop rotation and planting forest shelterbelts, obtained yields that were 3 - 5 centners higher per hectare than those of the adjacent collective farms which had not introduced sound crop rotation nor planted tree shelterbelts.

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The experience gained in mastering this agricultural system indicates that it is generally attainable and highly effective.

The Council of Ministers of the USSR and the Central Committee of the VKP(b) maintain that the collective and state farms of the steppe and timber-steppe regions, having gained the experience at aiming at high yields and in applying advanced agricultural methods, are in a favorable position to increase substantially agriculture and livestock breeding in the next few years.

At present all conditions are at hand for adopting the grass crop rotation system in the immediate future in steppe and timber-steppe areas.

In order to ensure high and stable yields during any weather conditions and to create a sound forage base for the development of livestock at collective and state farms of the steppe and timber-steppe regions of the European USSR, the Council of Ministers and the CC of the VKP(b) require of the Departments of Agriculture, State Farms, and Forestry, the Council of Ministers of the RSFSR, the Council of Ministers of the Ukrainian SSR, and the CC of the VKP(b) of the Ukraine, of Soviet and Party leading organizations of the Bashkir, Tartar, and Mordov ASSR, the Krasnodar and Astrakhan, Kuibishev, Saratov, Stalingrad, Chkalov, Ulianovsk, Penza, Rostov, Grozny, and Crimea provinces, the territorial and provincial committees, of the Party,

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the directors of state and forest farms, the MTS, and the chairman of collective farms - to organize large scale works on shelterbelt plantings and adopt the grass crop rotation system of agriculture within the shortest time possible.

The Council of Ministers of the USSR and the Central Committee of VKP(b) decree:

I

ON THE CREATION OF A SYSTEM OF VAST GOVERNMENT TREE SHELBERBELTS

1. In order to overcome the ruinous influence of the "suchovei" (dry winds) upon the yields of cereal crops, and to preserve the fertile soils of the Povolzhie, Northern Caucasus and the Central Black Earth provinces from wash-out, and in order to improve the water regimes and climatic conditions of these areas, that it is necessary to arrange for the planting of the following vast government tree shelterbelts in the years 1950 to 1965:

A government tree shelterbelt extending from Saratov to Astrakhan, on both banks of the river Volga, of a width of 100 meters each and a length of 900 km.;

A government tree shelterbelt in the direction of - Penza - Ekaterinovka-Veshenskaia - Kamensk, on the Northern Donets, on the watersheds of the rivers Khopra and Medveditsa, Kalitva and Berezovaia, consisting of three belts, of a width of 60 meters each, the distance between the

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belts of 300 meters, and a length of 600 km;

A government tree shelterbelt in the direction of Kamishin - Stalingrad, on the watersheds of the rivers Volga and Ilovlia, consisting of three belts, of a width of 60 meters each, a distance between the belts of 300 meters and a length of 170 km;

The government tree shelterbelt in the direction of Chapaevsk - Vladimirovka, consisting of 4 belts, of a width of 60 meters each, a distance of 300 meters between the belts, and a length of 580 km;

The government tree shelterbelt in the direction of Stalingrad-Stepnoi - Cherkessk, consisting of 4 belts, of a width of 60 meters each, a distance of 300 meters between the belts and a length of 870 km;

The government tree shelterbelt in the direction of the Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea, on the banks of the river Ural, consisting of 6 belts (three on the right and three on the left banks), of a width of 60 meters each, a distance of 100-200 meters between the belts, and a total length of 1,000 km;

The government tree shelterbelt Voronezh - Rostov-on-the Don, on both banks of the river Don, of a width of 60 meters each and a length of 920 km;

The government tree shelterbelt on both banks of the river Northern Donets, from the town of Belgorod to the river Don, of a width of 30 meters and a length of 500 km.

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The planting of the above government tree shelterbelts to be supervised by the Department of Forestry of the USSR.

The Department of Forestry of the USSR to be required to begin work on the planting of government shelterbelts in 1949.

2. In planting government tree shelterbelts, it is recommended that the following woody and shrub varieties be utilized:

a) for the government tree shelterbelt on the banks of the river Volga -

on the lot - Saratov - Stalingrad -

on the right bank: primarily - oak, birch, ash;

on the left bank: primarily - oak, poplar and ash;

on the right and left banks: in addition - common elm, U. pumila L. - small-leaved; maple Acer platanoides - sharp-leaved, A. tataricus L.; of shrubs - yellow acacia, Caprifoliaceae, C. tatarica L., Rosa L., pussywillow (Salix L.), and Oleaster (wild olive) Eleagnus angustifolia;

on the lot - Stalingrad - Astrakhan -

on the right bank of the river Volga: primarily - elm, U. pumile L., oak, poplar and maple;

on the left bank of the river Volga: primarily - oak, poplar, U. pumila L.;

on the right and left banks of the river Volga: in addition - the common elm, U. campestris, Acer tataricus L.; of shrubs: Tamarix L., Elaeagnus angustifolia L., Salix L., Ribes aureum Pursh., and yellow acacia.

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b) in the government tree shelterbelt of Penza - Ekaterinovka - Veshenskaia, Kamensk: primarily - oak, birch, ash, and Larix sibirica DC.; in addition Acer platanoides (sharp-leaved maple), A. tataricus L., Tilia (linden), common elm, apple and pear trees; of shrubs: yellow acacia, honeysuckle, sumach (R. cotinus L.), Ribes aureum Pursh., and hazelnut (Corylus L.)

c) in the government tree shelterbelt Kamishin - Stalingrad; - primarily - oak, Ulmus pumila L., Pinus L. and ash; in addition: Acer tataricus L. (maple) pear and apple trees, and common elm. Of shrubs: yellow acacia, honeysuckle, P. cotinus L. (sumach), Ribes aureum Pursh.;

d) in government tree shelterbelts - Chapaevsk - Vladimirovka: chiefly - oak, birch, ash, Ulmus pumila L.; in addition: common elm, Acer tataricus L.; of shrubs: yellow acacia, Prunus chamaecerasus Jacq. (P. fruticosa Pall.); (steppe cherry), Tamarix, wild olive (Elaeagnus angustifolia), Lonicera tatarica L., and Ribes aureum Pursh.;

e) in the government tree shelterbelt of Stalingrad - Stepnoe - Cherkessk: chiefly - oak, ash, Ulmus pumila L., poplar, white acacia; in addition: pear, apricot, Acer tataricus L., apple, cherry (Prunus ?); of shrubs: tamarix, Salix L., Ribes aureum Pursh., yellow acacia;

f) in the government tree shelterbelt - Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea: chiefly - oak, birch, Ulmus campestris, U. pumila L.,

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poplar, pinus (on sandy soil); in addition: Acer tataricus L.; linden, and Salix L.; of shrubs: yellow acacia, Lonicera tatarica L., Elaeagnus angustifolia (wild olive), tamarix;

g) in the government tree shelterbelt on the banks of the river Don: chiefly - oak, birch, pine tree, ash, poplar, Larix sibirica DC.; in addition: Acer plantanoides (sharp-leaved maple), A. tataricus L., common elm, pear, apple, mountain ash, cherry, linden, small-leaved; of shrubs: hazelnut, Lonicera tatarica L., Rhus cotinus L., yellow acacia, Hippophae L.;

h) in the government tree shelterbelt on the banks of the river Northern Donets: chiefly: oak, birch, poplar, ash; in addition: common elm, Acer platanoides, Acer tataricus L., pear, apple, cherry trees; of shrubs - yellow acacia, Lonicera tatarica L.

In the Krasnodar region, the Crimea province and the southern provinces of the Ukrainian USSR, in places favorable for the growing of Eucalyptus, to plant entire groves of the eucalyptus on the lands of the Goslesfond (government forest fund), as well as other woody genera, on the banks of the rivers.

5. The Department of Forestry of the USSR is required to:

a) take measures for the protection of all valuable forest units in the steppe and timber-steppe regions of the European USSR (Shipov Forest, Khrenov pine grove, Borisoglob forest unit, Tula forest reserves, the Shatilov Forest, the Black Forest, the Great-Anadolski Forest unit, the Fuzuluk pine forest,

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the Lenin and Minichski forest units of the Rostov province, the watershed and forest units of the Kuibishev and Ulianovsk provinces, the Poiar dacha, the Feodosiisk forestry, the Keshtaugorsk forest unit, etc.) In the above forests, as well as in all forest units situated along the watersheds of rivers, to establish strict supervision over the felling of trees in order to preserve and improve these forests;

b) in order to increase the water supplies of pastures in the lake regions of the basin of the river Sarpa - to arrange for the afforestation of these lakes and the banks of the river Sarpa;

4. To require the Department of Forestry of the USSR, with the aid of the Lenin Academy of Agricultural Sciences, to produce between 1949 - 1950 necessary information on the technical projects of planting tree shelter-belts and to present these for confirmation to the Council of Ministers of the USSR in the following periods: by January 1, 1950 - on the forest belts - Saratov-Astrakhan (on the banks of the Volga); Penza-Ekaterinovka - Veshenskaia - Kamensk; Chapaevsk - Vladimirovka; Kamyshin - Stalingrad; Voronezh - Rostov-on- the Don (on the banks of the river Don): Belgorod - Don (on the banks of the river Northern Donets). By January 1, 1951 - on the shelter belts - Stalingrad - Stopnoe - Cherkesk; and Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea.

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5. To require the Dept. of Forestry of the USSR, along with the Department of Agriculture to work out and present for confirmation to the Council of Ministers of the USSR, no later than January 1, 1950, suggestions concerning the segregation of lands and changes in the land utilization at collective farms and other households, in connection with the planting of government forest shelterbelts.

6. To require the Depts. of Forestry and Agriculture to organize expeditions in groups of 12 detachments, consisting of a total number of 120 specialists for the assignment of lands for tree shelter belts.

7. To require the Department of Forestry of the USSR to:

a) to organize three territorial administrations for the supervision of the work of planting vast tree shelter belts:

In Stalingrad - on forest plantings along the banks of the river Volga, on the lot from Kamyshin to Astrakhan; the forest belts - Kamyshin - Stalingrad, and Stalingrad - Cherkesk;

In the city of Saratov - on forest plantings on the banks of the river Volga on the lot - Saratov - Kamyshin; the forest belt Penza - Ekaterinovka - Veshenskaia - Kamensk, and Chapaevsk - Vladimirovka;

In the city of Uralsk - on forest plantings of the belt - Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea;

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b) To organize in 1949 the planning-research unit "Agrolesproekt" (Agricultural forest project) for research and project studies on forest growth.

II

ON THE DEVELOPMENT OF TREE SHELTER PLANTINGS ON THE FIELDS OF COLLECTIVE AND STATE FARMS

8. To accept the fact that one of the most important conditions of guaranteeing a high yield of cereal crops, of controlling ~~of~~ the harmful influence of dry winds upon the harvest, of improving the water regime, and eliminating the processes leading to the destruction of the soil layer (wash-and blow-out of soils) in the steppe and timber-steppe regions of the European USSR - lies in the carrying out of the vast program of measures undertaken for the creation of shelter forest plantings on the fields of collective and state farms.

9. To establish for the years 1949 - 1965 a government plan for the creation of shelter forest plantings on a territory of 5,709,000 hectares, of which - 3,592,500 hectares will be planted by the collective farms themselves, at their expense and with the aid of the government; 1,536,500 hectares to be planted by the Department of Forestry of the USSR, of which 960,500 hectares will be on lands of the Goslesfond in tree-less regions and 576,000 hectares on

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collective farm lands, planted with the aid of collective farmers. A total of 580,000 hectares to be planted by state farms of the Department of State Farms of the USSR - and distributed among republics, regions and provinces as follows:

a) By collective farms and at their expense:

(thousands of hectares)

Republics, Territories, Provinces	Total	In the Years			
		1949	1950	1951-55	1956-1965
Voronezh Province	236.5	27.0	10.0	121.5	98.0
Kursk Province	215.1	6.5	12.0	129.6	67.0
Orlov Province	158.0	4.0	9.0	145.0	-
Tambov Province	96.0	6.0	10.9	80.0	-
Riazan Province	90.5	0.5	4.0	23.5	62.5
Tula Province	94.7	0.5	4.0	25.5	64.7
Mordov ASSR	67.6	1.0	2.0	18.0	46.6
Astrakhan Province	9.7	0.5	1.0	5.0	3.2
Kuibishev Province	140.0	3.0	7.5	42.0	87.5
Saratov Province	247.0	3.0	9.3	62.0	172.7
Chkalov Province	201.5	3.5	8.2	47.0	142.8
Stalingrad Province	241.0	3.0	10.0	59.1	168.9
Bashkir ASSR	143.0	2.0	6.0	36.0	99.0
Ulianovsk Province	33.0	1.0	3.0	15.5	13.5

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Tartar ASSR	171.2	2.0	5.0	27.0	137.2
Penza Province	92.2	1.0	4.0	23.0	64.2
Krasnodar territory	146.0	4.0	8.0	47.0	87.0
Rostov Province	245.5	5.5	8.0	60.3	171.7
Stavropol territory	161.0	4.0	7.0	41.0	109.0
Grozny Province	10.5	0.5	1.5	8.5	-
Crimea Province	36.0	2.0	2.5	13.0	18.5
Ukrainian SSR.....	756.5	20.0	28.0	334.5	374.0
TOTAL:	3,592.5	80.5	160.0	1,364.0	1,988.0

b) by the Department of Forestry of the USSR and at its expence:

(thousands of hectares)

Republic, Territory, Province	1949		1950		1951-1955		
	Ravine-Gullies	In Goslesfond	Ravine-Gullies	In Goslesfond	Ravine-Gullies	In Goslesfond	In Collective farm forests
Voronezh Province	1.0	5.6	2.3	6.7	46.2	29.6	15.0
Kursk Province	2.0	3.8	8.8	4.5	28.7	2.4	20.0
Orlov Province	1.8	2.2	4.5	2.4	43.4	15.1	16.0
Tambov Province	1.5	3.6	3.0	4.1	26.2	7.0	3.0

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Riazan Province	0.3	4.5	0.5	5.0	15.2	13.0	4.5
Tula Province	0.3	1.7	2.0	0.8	20.7	0.3	4.7
Mordov ASSR	0.5	3.9	1.5	4.0	16.0	8.0	2.8
Astrakhan Province	-	0.4	-	0.5	-	2.3	2.4
Kuibishev Province	1.0	5.0	2.0	5.4	8.5	47.0	3.3
Saratov Province	1.0	4.4	1.0	4.7	4.5	17.3	3.1
Stalingrad Province	0.8	4.2	3.0	6.2	31.6	20.4	3.8
Chkalov Province	0.4	3.5	0.4	4.6	1.2	35.4	2.6
Bashkir ASSR	1.0	6.0	2.0	8.3	27.0	48.0	8.4
Ulianovsk Province	0.5	6.5	1.0	7.3	3.5	42.9	3.4
Tartar ASSR	1.0	4.7	2.0	5.0	10.0	15.0	4.5
Penza Province	0.2	4.8	0.5	5.0	5.3	18.0	2.4
Krasnodar Territory	-	1.5	-	2.2	-	14.5	15.0
Rostov Province	0.5	5.9	2.0	4.7	10.0	85.0	10.5
Stavropol Territory	0.2	4.8	0.5	5.0	5.3	18.0	2.4
Grozny Province	-	0.2	-	0.6	-	6.1	0.6
Crimea Province	-	2.6	-	3.7	4.0	6.2	-
Ukrainian SSR	2.0	67.5	5.0	70.0	23.5	193.8	50.0
TOTAL:	16.0	148.1	42.0	159.2	328.0	653.2	190.0

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To require the Department of Forestry of the USSR to complete by 1965 the afforestation of all ravines and gullies on collective farms in the above republics, regions and provinces:

c) by the State Farms of the Department of State Farms of the USSR and at their expense:

(thousands of hectares)

Republic, Territory, Province s	Total	In the Years			
		1949	1950	1951-55	1956-1966
Voronezh province	7.3	0.2	0.5	3.1	3.5
Kursk province	0.9	-	0.1	0.8	-
Orlov province	1.5	0.1	0.2	1.0	0.2
Tambov province	3.9	0.1	0.2	1.5	2.1
Riazan province	0.2	-	-	0.2	-
Tula province	1.4	0.1	0.1	0.5	0.7
Mordov[illegible] ASSR	0.5	-	-	0.2	0.3
Astrakhan province	7.7	0.1	0.3	1.6	5.7
Kuibishev province	32.2	0.1	0.9	6.2	25.0
Saratov province	71.6	0.3	1.9	15.5	53.9
Stalingrad province	69.9	0.6	1.7	15.4	52.2
Shkalov province	78.8	0.5	2.2	18.0	58.1
Bashkir ASSR	21.0	0.2	1.1	6.4	13.3
Ulianovsk province	8.1	0.1	0.5	2.9	4.6
Tartar ASSR	7.0	0.1	0.4	2.6	3.9

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Penza province	1.2	-	0.1	0.7	0.4
Krasnodar territory	31.4	0.7	1.8	10.2	18.7
Kostov province	69.0	1.2	2.4	15.3	50.1
Stavropol territory	39.9	0.6	1.9	12.4	25.0
Grozny province	3.1	0.1	0.2	1.0	1.8
Crimea province	18.3	0.2	0.5	4.0	13.6
Ukrainian SSR.....	105.1	2.7	4.0	30.5	67.9
TOTAL:	580.0	8.0	21.0	150.0	401.0

10. The planting and sowing of field shelter forest belts and the afforestation of watersheds at collective farms will be carried out by the collective farms and at their expense, with government aid.

Forest plantings on ravines, gullies, watershed divides of rivers, afforestation of sandy areas, and the lands of the Goslesfond - will be carried out by the facilities available to the Department of Forestry of the USSR, while on lands which are the property of collective farms, the work will be performed by the Department of Forestry, with the use of the labor of collective farmers.

The planting and sowing of trees on collective farm forest areas will be performed by collective farms and at their expense under the supervision of the Department of Forestry.

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11. To require the Departments of Agriculture, State Farms, and Forestry, the leading (supervisory) Soviet and Party organizations of the republics, regions and provinces to:

a) work out within a three months period a unified plan of afforestation works according to provinces, regions, and republics, for the years 1949-1965, and to inform each regional, state and collective farm, and forest economy of their respective tasks in creating forest shelter plantings, the gathering of seeds and the growing of seed material at collective farm - and government tree nurseries.

b) To ensure during 1949 to 1950 the reconstruction of all damaged shelter forest plantings situated on the lands of collective and state farms by the labor of their workers.

12. In order to create perennial and stable shelter forest plantings that may prove of benefit at an early age, the plantings to include perennial, as well as rapidly growing woody genera, the latter to be selected with a view to their suitability to local soil-climatic conditions. Special attention to be directed to the planting of oaks in steppe regions, as one of the most valuable and perennial genera. To also introduce 10-15 percent of fruit trees and shrubs in the shelterbelts plantings.

13. To recommend the following woody-shrub genera for shelterbelts at collective and state farms:

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a) on the powerful and alkaline (?) ("vishchelochennie") black earth lands of the Tula, Orlov, Tambov, Kursk, Riazan, Penza, Voronezh, Saratov, Ulianovsk, Kuibishev provinces, and the Mordov and Tartar ASSR: primarily the planting of oak, birch, Larix sibirica L., common pine (on sandy soils), poplar; in addition: Acer Platanoides (sharp-leaved maple), linden-small-leaved, pear and apple trees; shrubs - Rhus cotinus L. (sumach), spindle tree (Evonymus L.) (except in sugar-beet regions), Ribes aureum Pursh.;

b) on ordinary chernozem (black soil) of the Ukrainian SSR - primarily - oak, birch, gleditshchia, ash, common pine (on sandy soils), in addition: - Acer platanoides, small-leaved linden, pear and apricot trees; of shrubs - Rhus cotinus L., Ribes aureum Pursh.;

c) on the southern chernozem of the Ukrainian SSR and in the Crimea - primarily - oak, gleditshchia, common and green ash, white acacia; in addition: - Acer platanoides and A. campestre, apricot, pear and apple trees;

d) on dark-chestnut soils of the Ukrainian SSR, and in the Crimea - primarily - oak, gleditshchia, green ash, white acacia; in addition: - Acer tataricus L. apricot, Prunus cerasifera Ehrh.;

e) on chestnut-solonets soils of the Ukraine and Crimea - primarily - gleditshchia; of shrubs - wild olive (Elaeagnus L.) R. cotinus L., Ribes aureum Pursh. tamarix, amorpha;

f) on the rich ("powerful"), alkali chernozem of the Tula, Orlov, Tambov,

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Kursk, Riazan, Penza, Voronezh, Saratov, Ulianovsk, Kuibishev provinces, the Mordov and Tartar ASSR - primarily - oak, birch, Larix Mill., common pine (on sandy soils), ash; in addition - Acer platanoides L., small-leaved linden, pear and apple trees;

g) on ordinary chernozem of the Voronezh, Stalingrad, and Saratov provinces - primarily - oak, birch, ash, common pine (on sandy soils); in addition - Acer platanoides, small-leaved linden, pear, apple, cherry trees; of shrubs - Ribes aureum Pursh, R. nigrum L., Lonicera tatarica L., Rosa L., Corylus avellana (hazelnut);

h) on southern chernozem of the Stalingrad and Saratov provinces - primarily - oak, ash, birch, common pine (on sandy soils); in addition - Acer platanoides, pear and apple trees;

i) on the southern chernozem of the Rostov province and the Stavropol region - primarily - oak, gledishchia, ash, white acacia; in addition - Acer platanoides, A. campestre, apricot, pear, apple trees; of shrubs - Ribes aureum Pursh., Rhus cotinus L., privet (Ligustrum L.);

k) on dark chestnut soils of the Stalingrad province - primarily - oak green ash, white acacia, common pine (on sandy soils); in addition - Acer tataricus L., pear tree; of shrubs - Ribes aureum Pursh., Lonicera tatarica L.,;

l) on dark chestnut soils of the Rostov, Groznyy provinces and the Stavropol region - primarily - oak, gledishchia, green ash, common pine (on

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sandy soils); in addition - Acer tataricus L., apricot, pear trees; of shrubs - Ribes aureum Pursh, Rhus cotinus L., Lonicera tatarica L., privet;

m) on light chestnut (complex (?)) soils of the Astrakhan, Stalingrad, Rostov, Groznyy provinces, and Stavropol territory - primarily - Ulmus pumila L., white acacia; in addition - Acer tataricus L., Morus alba L.; of shrubs - Ribes aureum Pursh., Elaeagnus angustifolia L., tamarix;

n) on dark (colored) soils of the "padin" (?low sections) of the Stalingrad and Astrakhan provinces - primarily - oak, ash; in addition - Ulmus Pumila L., pear, Acer tataricus L.; of shrubs - Ribes aureum Pursh., Lonicera tatarica L.;

o) on the Pre-azov and Pre-Caucasian chernozem of the Krasnodar and Stavropol territories, the Rostov and Groznyy provinces - primarily - oak, gledishchia, ash, white acacia; in addition - Acer platanoides, and A. campestre, linden, pear, white mulberry (Morus alba L.), apricot, Carpinus betulus; of shrubs - Ribes aureum Pursh., Rhus cotinus L., Cronus L.;

p) on rich chernozem soils of the Ulianovsk and Kuibishev (Zavolzhie) and Chkalov provinces, - the Tartar and Bashkir ASSR - primarily - oak, birch, Larix Mill., ash; in addition - Acer platanoides, small-leaved linden, pear and apple tree;

r) on carbonate (?) chernozem soils of the Bashkir ASSR - primarily - oak, birch, Ulmus Pumila L., in addition - common elm, Acer Tataricus L., Pirus malus L. sibiricus (?); of shrubs - Ribes aureum Pursh., yellow acacia;

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s) on ordinary chernozem of the Kuibishev, Saratov, Chkalov provinces and the Bashkir ASSR - primarily - oak, birch, Larix Mill. (Siberian), ash; in addition - Acer platanoides, small-leaved linden, Acer tataricus L., pear and apple trees; of shrubs - Ribes aureum Pursh., Hippophae L.; Rhus tataricus L.;

t) on the southern chernozem of the Saratov, Kuibishev and Chkalov provinces - primarily - oak, Ulmus pumila L., ash; in addition - Acer platanoides, A. tataricus L., Siberian apple tree, pear tree; of shrubs - Ribes aureum Pursh., Lonicera tatarica L., yellow acacia;

u) on the dark chestnut soils of the Saratov, Stalingrad and Chkalov provinces - primarily - Ulmus pumila L., green ash; in addition-Acer Tataricus L., apple and pear trees; of shrubs - Ribes aureum Pursh., yellow acacia;

In the Krasnodar region, the Crimea and the southern provinces of the Ukrainian SSR, in places favorable for the growing of eucalyptus trees, it is recommended to plant these around ponds, watersheds, the banks of irrigation channels and in shelterbelts along with other woody genera;

14. To consider it wrong to plant shelterbelts in the shape of narrow rows which are unable to protect the soils from wash-out - in regions with sharply defined reliefs and a large runoff of melted and rain waters.

The basis of forest shelterbelts should be the creation of a system of field shelter, pre-ravine and other forest plantings, of which the width

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has to conform to the purpose of the plantings, local natural conditions, i.e.:

Forest belts at collective and state farms for field protection from dry winds in plains - to measure from 10-20 meters;

Forest belts at collective and state farms, situated across slopes to stop wash-and runoff of soil (water-regulating forest and garden-forest belts, to measure - 20 to 60 meters;

Ravine-gullies forest plantings in the shape of pre-ravine and pre-gully belts - to measure 20-30 meters, and in addition - entire slopes of ravines and gullies to be planted;

Forest plantings around watersheds to measure 10-20 meters;

In the Ukrainian SSR the planting of shelterbelts to conform with the decree of the Council of Ministers of the USSR, dated April 24, 1948, no. 1307, i.e. to measure 9 to 12 and 17 meters.

The principal (basic) longitudinal field forest shelter belts on collective and state farms to be dispersed along the boundaries of the fields under crop rotation, and in the event that the fields be large - within, along the boundaries of brigade plots, taking into consideration the reduction in distance between the belts in steppe regions.

15. To require the Department of Agriculture to have Machine Tractor Stations include the production plans on the work of preparing soils, the

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planting, sowing and caring of trees on collective farm lands, under agreements with collective farmers.

The work of the MTS in preparing soils, the sowing and planting of trees, and the care of forest plantings to be compensated by the collective farms in money according to estimates established by the Departments of Agriculture and Finance.

16. To recommend to collective and state farms the organization of work "links" for forest plantings and the care of trees, the latter for a period of from 5 to 7 years.

The Councils of Ministers of republics, territorial and district executive committees, to be required to organize in 1949 two-year courses for the training of personnel for work on forest plantings at collective farms.

17. In order to promote the successful growth of shelterbelt plantings at collective farms, as well as to prepare seeding material for nurseries, it is recommended that collective farms set up a system of additional compensation to the collective farmers engaged in forest plantings, their preservation and the care of standard seed material at collective farm nurseries. The amounts to be calculated as follows:

a) for the acclimatization of no less than 80 percent of all planted material assigned to working units, in the first year on the entire plot - to add the pay of ten working days for each hectare of planted trees;

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b) for the acclimatization within the first year of over 85 percent of the total number of planted trees and shrubs on the entire plot, assigned to one unit, to add the pay of an additional 15 working days for each hectare of planted trees;

c) for the preservation of forest plantings of no less than 80 percent of the number of trees and shrubs, in the second and third years, acclimatized in the first year and those planted subsequently, to add the pay equalling 8 working days for each hectare of tree plantings;

To provide additional compensation, in working days only, upon condition that the acclimatization of plants in the first year and their preservation in the second and third years have been accomplished.

d) for the growth of standard seed material above the established plan at collective farm nurseries - to distribute, upon decisions reached at general meetings of collective farmers, additional compensation in money in the amount of up to 50 percent of the cost of seed material grown above the set requirements, the cost for seedlings to be established by government forest nurseries.

Further compensation for additional working days and monetary compensation to be distributed in proportion to the number of working days put in by every collective farmer and his unit on forest planting and nursery work, the unit, as a whole, to be compensated in addition, for its supervision in the

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amount of 5 percent of the total number of working days put in by the unit.

18. The plan of agricultural work in territories, state and collective farms to be considered completed only upon condition that the work of planting shelterbelts and supervision over seed material at nurseries are fulfilled.

19. To require the Department of Agriculture, the Council of Ministers of the RSFSR, the Councils of Ministers of the Ukrainian SSR, and those of autonomous republics, the territorial and provincial Executive Committees - to organize in 1949, within each province an autonomous republic, at one or two district agricultural schools, special departments for the training of cadres for agro-forest-melioration work, the courses to last three months under the supervision of these district agricultural schools.

20. To require the Council of Ministers of the RSFSR, the Councils of Ministers of the Ukrainian SSR, and those of autonomous republics, the territorial and provincial executive committees to:

a) require of the Departments of Agriculture of the autonomous republics and the administrations of agriculture in territories and provinces to determine the respective locations where forest planting work and sectors of agro-forest melioration are to be set up;

b) to assign to the agricultural departments staffs of senior agro-forest meliorating personnel and to MTS - agro-forest meliorator personnel.

21. To permit the Department of Agriculture to introduce the administration

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of forest melioration as a unit of the main administration of land development and crop rotation.

22. To permit the Department of State Farms to organize a division for the conduct and supervision of works on shelterbelt plantings, the organization of nurseries, the growth of seed material, the development of fruit growing and the conduct of model households in forests attached to state farms; to permit the Councils of Ministers of the RSFSR and those of the Ukrainian SSR to organize sectors on agro-forest melioration at the departments of state farms of the respective republics.

To add to the staff of the Department of State Farms of the USSR, a senior engineer-agro-forest meliorator wherever forest plantings are planned.

23. To require of the Department of State Farms of the USSR:

a) to organize schools for training master-agro-forest meliorators at their own agricultural technical schools, as well as at those state farms, where shelterbelts are well established;

b) to increase the number of students at technical agricultural schools of the Department of State Farms in order to provide state farms with necessary technical personnel;

d) to work out within 3 months, together with the Department of Forestry and the BTSSPS, - and to submit to the Council of Ministers of the USSR - suggestions concerning the norms of production, cost estimates on agro-

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forest meliorative work, as well as plans for stimulating labor personnel, employees and specialists at state farms to successfully fulfill the tasks connected with shelterbelt planting.

24. To require of the Department of Forestry:

a) the organization - in 1949-1950 - of 50 additional steppe forest economies and 200 forestries to conduct agro-forest meliorative works in steppe-and timber steppe regions;

b) to organize, beginning 1948, the training of junior technician - mechanics at the two-year forest schools;

c) to extend technical assistance to specialists at forestries for the planting of field shelterbelts and the preparation of seed material at collective farm nurseries.

25. To require the Departments of Forestry and Agriculture to work out active instructions on planning agro-forest meliorative plantings, with the aid of the Department of State Farms in accordance with this decree.

To require the Councils of Ministers of republics, the territorial and provincial executive committees to work out, - in conformance with this decree and all active instructions, - technical agricultural directions for shelterbelt plantings adjusted to local conditions.

26. To require the Department of Agriculture, Forestry and State Farms of the USSR to ensure in 1949 the set-up of experimental sowings by nest method

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of shelterbelts on the fields of every experimental and scientific institution, as well as at forest households in steppe-and timber steppe regions. To assign to the Lenin All-Union Academy of Agricultural Sciences the task of working out-within a 2-months period - directions for introducing these plantings.

III

ON THE STABILIZATION AND AFFORESTATION OF SANDY AREAS

27. In order to prevent the shifting of sands in steppe and part-desert regions on the fertile lands of the Povolzhie, the Northern Caucasus, the central chernozem provinces, and the Ukrainian SSR, the Department of Forestry of the USSR is required, in the years 1949 to 1955, to take care of the stabilization and afforestation of sandy areas on a territory of 322,000 hectares distributed according to republics, territories and provinces, as follows:

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(thousands of hectares)

Republic, Territory, Province	1949	1950	1951-1955
Voronezh Province	3.0	5.0	29.0
Kursk Province	1.5	3.0	5.0
Orlov Province	0.3	0.6	4.4
Tambov Province	1.0	2.9	9.9
Riazan Province	0.2	0.6	5.2
Mordov ASSR	0.5	0.5	3.0
Astrakhan Province	1.0	5.0	34.5
Kuibishev Province	-	1.1	1.7
Saratov Province	-	2.0	12.5
Stalingrad Province	1.2	3.3	28.2
Chkalov Province	-	0.1	0.9
Bashkir ASSR	0.2	0.2	1.6
Ulianovsk Province	0.2	0.4	1.4
Tartar ASSR	0.2	0.3	2.5
Penza Province	-	0.3	3.7
Rostov Province	0.3	3.3	15.4
Stavropol Territory	1.8	3.0	8.9
Grozny Province	1.0	1.5	17.5
Ukrainian SSR....	10.0	10.0	71.2
TOTAL:	22.4	43.1	256.5

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To require the Department of Forestry to work out and submit to the Council of Ministers of the USSR by January 1, 1950, a plan for the years 1956 - 1965 relating to measures for the stabilization and afforestation of the entire sandy area in the above provinces, territories and republics.

28. To recommend the following woody and shrub varieties for the afforestation of these sandy areas:

a) in the timber-steppe zone - common pine, birch, oak, poplar, yellow acacia, Lonicera tatarica, Salix L.

b) in the steppe zone - common pine, Crimean pine, white and yellow acacia, oak, poplar, apricot, mulberry white, Rhus L. (sumach), oleaster (wild olive), Lonicera tatarica L., Salix L., amorpha;

c) in the part-desert zone - white acacia, Ulmus pumila L., oak, poplar, white mulberry, apricot, oleaster, Rhus L., tamarix, white saxaul, Salix L., pine;

29. In order to advance the stabilization of shifting sands as much as possible, the Department of Forestry is required, along with the Astrakhan, Grozny, and Stalingrad provinces, the executive and district party committees, and the Stavropol executive and regional party committee - to ensure a wide application of the sorghum - "gumaev"(?) hybrid, the Agropyrum descrterum Schult, and other grasses, so as to transform sandy areas into pasture and hay producing lands.

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To ensure by 1949 the receipt of seeds of the sorghum-gumaev hybrid by the Departments of Agriculture and State Farms of the USSR, and the Stavropol experimental field station of perennial crops for the sowing of an area of 300 hectares; the sowing in 1950 of 20,000 hectares, and in 1951 of an area of 100,000 hectares.

ON THE GROWING OF SEED MATERIAL IN GOVERNMENT, COLLECTIVE AND STATE FARM TREE NURSERIES

30. In order to provide for government, collective and state farm tree shelterbelts and the afforestation of ravines, gullies, lake and river banks-in steppe-and timber steppe regions of the European USSR, to require the Departments of Forestry, Agriculture, and State Farms of the USSR, the Council of Ministers of the RSFSR, the Council of Ministers of the Ukrainian SSR and the CC of the VKP(b) of the Ukraine, the Councils of Ministers of the autonomous republics, the territorial and district executive party committees - to ensure the growing of standard seedlings of woody, shrub and fruit varieties in government, collective and state farm tree nurseries in the required quantities.

31. To confirm the plan of growing seed material for tree shelterbelts for the years 1949-1955:

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(In millions of items)

	1949	1950	1951-1955
In government nurseries:			
Department of Forestry	1900	2550	14477
Department of Agriculture	634	1015	8062
In collective farm nurseries	246	377	2686
In state farm nurseries of the Department of State Farms of the USSR	86	219	1460
TOTAL:	2866	4161	26685

To consolidate the plan of growing seed material in provinces, territories and republics:

a) at government nurseries of the Departments of Forestry and Agriculture:

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(In millions of items)

Republic, Territory Province	Nurseries of Dept. of Forestry of USSR			Nurseries of Dept. of Agriculture of USSR		
	1949	1950	1951-55	1949	1950	1951-1955
Voronezh Province	95	140	1210	50	100	729
Kursk Province	65	180	561	35	70	777
Orlov Province	50	125	789	20	50	870
Tambov Province	90	135	471	20	50	480
Riazan Province	50	61	379	-	10	132
Tula Province	17	28	257	-	10	144
Mordov ASSR	40	60	298	-	5	108
Astrakhan Province	5	20	426	-	-	30
Kuibishev Province	54	86	609	30	50	240
Saratov Province	54	77	428	30	60	360
Chkalov Province	39	51	401	33	40	270
Stalingrad Province	45	115	907	30	50	530
Bashkir ASSR	75	105	850	15	20	210
Ulianovsk Province	72	87	512	9	15	90
Tartar ASSR	50	75	320	18	30	156
Penza Province	50	58	294	12	20	132
Krasnodar territory	12	22	295	35	40	270
Rostov Province	55	100	1207	35	60	360
Stavropol territory	40	70	516	30	40	240
Grozny Province	12	21	242	7	10	48

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Crimea Province	16	37	102	15	15	78
Ukrainian SSR	895	900	3,403	210	270	2,008
TOTAL:	1,900	2,550	14,477	634-	1,015	8,062

b) At State and Collective Farm Nurseries:

(In millions of items)

	Nurseries of State Farms of Dept. of State Farms			Collective Farms Nurseries		
	1949	1950	1951-55	1949	1950	1951-55
Voronezh Province	1.5	4.2	30	15	20	243
Kursk Province	0.3	0.6	8	15	30	259
Orlov Province	0.3	0.9	9	10	15	290
Tambov Province	0.9	2.4	15	10	15	100
Riazan Province	0.2	0.2	2	5	10	44
Tula Province	0.3	0.8	5	5	10	48
Mordov ASSR	0.2	0.3	2	2.5	5	36
Astrakhan Province	0.9	2.4	15	1.5	2.5	10
Kuibishev Province	3.0	12.0	60	12.5	19	80
Saratov Province	12.0	30.0	150	12.5	22.5	120
Chkalov Province	9.0	29.0	170	14	20.5	90
Stalingrad Province	12.0	27.3	150	17	25	110
Bashkir ASSR	3.0	7.5	60	7.5	15	70

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(Oblast)						
Ulianovsk Province	1.5	4.0	27	4	7.5	30
Tartar ASSR	1.5	1.0	26	7.5	12.5	52
Penza Province (Oblast)	0.3	0.6	7	5	10	44
Krasnodar Territory	5.5	12.5	100	15	20	90
Rostov Province (Oblast)	9.6	23.7	150	16.5	20	120
Stavropol Territory	4.2	9.9	120	12.5	17.5	80
Grozny Province (Oblast)	0.3	1.2	10	3	4	16
Crimea Province (Oblast)	3.0	7.5	40	5	6	26
Ukrainian SSR	16.5	39.0	305	50	70	668
TOTAL:	86.0	219.0?	1,460	246	377	2,686

32. To require the Department of Forestry of the USSR to organize between 1949 and 1950, in addition, 60 forest nurseries, of these 3 at the Stavropol region; 6 at the Rostov province; 4 at Astrakhan; 8 at Saratov; 5 at Kuibishev; 11 at Stalingrad; 6 at Chkalov; 3 at Grozny; 1 in the Crimea; 2 at Penza; 2 at Ulianov; 3 at Riazan; 3 at Tula; 1 in the Tartar ASSR; 1 at the Bashkir ASSR; and 1 at the Mordov ASSR.

33. To require the Department of Agriculture of the USSR, the Council of Ministers of the republics, the territorial and provincial executive committees, and Party committees to organize, in addition 60 government tree nurseries, of these: 32 in 1949, and 28 in 1950; to be distributed among republics, territories and provinces, as follows:

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Republic, Territory, Oblast	Number of Nurseries	Of these: in 1949	in 1950
Bashkir ASSR	4	2	2
Grozny Oblast	2	2	-
Krasnodar Territory	2	2	-
Rostov Oblast	3	-	3
Kuibishev Oblast	5	3	2
Mordov ASSR	4	2	2
Penza Oblast	7	3	4
Riazan Oblast	10	5	5
Saratov Oblast	4	2	2
Tartar ASSR	2	2	-
Tula Oblast	10	5	5
Ulianovsk Oblast	4	2	2
Chkalov Oblast	3	2	1
TOTAL:	60	32	28

34. To require the Council of Ministers of the RSFSR, the Council of Ministers of the Ukrainian SSR and the CC of the KP(b) of the Ukraine, the Councils of Ministers of autonomous republics, the territorial and

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oblast party committees of the steppe and timber-steppe zone of the European USSR to organize in 1949 no less than one collective farm tree nursery for every 5 to 10 collective farms, scheduled to have shelterbelts. The lists of the collective farms required to establish nurseries to be approved before January 1, 1949.

To recommend to collective farms the assignment of the most convenient land plots for tree nurseries and to appoint a permanent staff for continuous work.

35. To require the Department of State Farms to organize in 1949 to 1950 - 110 accounting interstate tree nurseries intended to cover fully the needs in seed material at state farms; 80 nurseries to be set up in 1949 and 30 nurseries in 1950.

36. To require the Department of Agriculture to arrange for the plowing on collective farm nurseries under agreements with collective farms and with the aid of machine tractor stations (MTS); the sowings to cover woody, shrub and fruit varieties; the depth to be 26 - 27 cm., the labor to be compensated for in money.

37. To release beginning 1949 collective farms from the obligation of delivering agricultural products to the government from lands occupied by tree nurseries.

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38. To require the Departments of Taste- Testing and Food Industries of the USSR to transmit to the Departments of Forestry, Agriculture and State Farms - seeds obtained from frozen fruits.

39. To require the Departments of Forestry, Agriculture and State Farms to provide government collective and state farm tree nurseries with seeds of woody and shrub varieties.

The Department of Forestry, together with the Departments of Agriculture and State Farms to determine, within a 2 months period, the requirements in woody-shrub seeds for the years 1949 to 1955, and to submit proposals to the Council of Ministers of the USSR concerning the organization of seed supplies and the measures for improving and developing tree-planting.

40. To require of the Department of Forestry to sell from its nurseries additional seed material to collective and state farms for tree shelter-belts and for the planting of fruits and berries.

41. To confirm the following typical equipment for tree nurseries of the Departments of Forestry and Agriculture and the tree nurseries of state farms of the Department of State Farms:

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	For nurseries with a land area	
	Up to 100 h.	From 100 - 200 h.
Tractor STZ-NATI	1	1
Garden Tractors "TOP"	1	2
Auto-Truck GAZ-51.	1	1
Plow cultivator.	1	1
3-Gang Tractor Plow with Subsoiler Plow. . . .	1	1
5-Gang Tractor Plow - P - 5 - 35.	1	1
Horse plows	2	3
Tractor cultivator KUTS - 4, 2	1	1
Universal tractor cultivator	1	1
Horse cultivators.	2	4
Plows for the tractor "TOP".	2	4
Disk Plow-huller (or disk-tiller).	1	1
Cultivators for the tractor "TOP".	2	4
Hand cultivators (planets)	10	15
"Zig-Zag" Harrows.	15	15
Horse tree drills.	1	1

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	For nurseries with a land area	
	Up to 100 h.	From 100 - 200 h.
Hand tree drills	2	4
Digging plows LS-2	3	6
Horse sprayer	1	1
Knapsack sprayers	2	4
Stationary oil - tara (holding capacity in tons)	5	10
7 foot grader	1	1
2-axle, 2-ton Auto-trailer	1	1
Sprinkling equipment KDU with motor	1	1

42. To improve the supervision of the work at nurseries, the Department of Agriculture is required to:

a) reorganize the All-Union Office of the "Agrolesem" into the All-Union Trust "Agroles-nursery", while the republic, territorial, and oblast offices of "Agrolesem" are to be reorganized into Trust divisions.

b) organize in 1948 three divisions of the Trust "Agroles-nursery" - in the city of Orel, to serve the nurseries of Orel oblast - in the city of Tambov, to serve Tambov oblast nurseries - and in the city of Ufa, to serve the nurseries of the Bashkir ASSR. Three

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divisions of the Trust "Agroles-nursery" are to be established in 1949: one at the city of Riazan to serve the nurseries of Riazan oblast; at the city of Tula to serve Tula nurseries; and at the city of Penza to serve nurseries of Penza oblast and those of the Mordov ASSR.

ON THE INTRODUCTION AND ADOPTION OF GRASS FIELD CROP ROTATIONS

43. To give consideration to the fact that the introduction and mastering of the system of food and forage grass field crop rotations at collective and state farms represent one of the most important measures in raising the yield of agricultural crops, for the creation of a stable forage base for livestock, and the increase of labor output at state and collective farms.

To require of the Department of State Farms of the USSR to complete in 1949 the work of introducing grass-field crop rotation on all state farms of the steppe and timber-steppe zone of the European USSR.

To require the Department of Agriculture of the USSR, the local soviet and party organs of the republics, territories and oblasts of the steppe and timber-steppe zone of the European USSR to complete no later than by 1950 the introduction of grass-field crop rotations at all collective farms, wherever this work has not been performed as yet, with the

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following distribution among republics, territories and oblasts:

Republic, Territory, Oblast	Number of Collective Farms	
	In 1949	In 1950
Ukranian SSR	5500	2909
Voronezh Oblast.	900	576
Kursk Oblast	1300	1151
Tambov Oblast.	522	--
Orlov Oblast	550	486
Krasnodar Territory.	76	75
Rostov Oblast.	148	--
Astrakhan Oblast	35	26
Saratov Oblast	230	--
Crimea Oblast.	320	100
Ulianovsk Oblast	15	--
Penza Oblast	219	--
Tula Oblast.	550	508
Bashkir ASSR	505	434
Mordov ASSR.	96	--
TOTAL:	10866	6265

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The work of introducing grass-field crop rotations at all state farms, under the Department of State Farms, to be concluded in 1949.

44. Taking into consideration the lack of natural appendages of land suitable for forage in steppe and timber-steppe regions and their low productivity, the Department of Agriculture of the USSR, along with the Department of State Farms, the leading soviet and party organizations of republics, territories, and oblasts are required to ensure the introduction of forage crop rotation, as a matter of course, in every collective and state farm to meet the needs of livestock in pastures, of succulent forage, and hay. Forage crop rotations are to be introduced first (before any other) in pastures of low productivity, and in case of a lack of these appendages - on grass lands.

45. Crop rotations at collective farms of steppe and timber-steppe regions of the European USSR to be introduced to conform with the decree of the Council of Ministers of the USSR, dated July 21, 1945, "On Measures Destined to Improve the Introduction and Adoption of Crop Rotations at Collective Farms", with a compulsory inclusion of perennial grasses (a mixture of cereal and legumes) and black (pure) fallows. In areas of adequate moisture to provide for the increase of the area under fallows, following the weeding of fields, in order to put larger sections of land to use.

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46. To require the Departments of Agriculture, State Farms, the leading soviet and party organizations, the directors and agronomists of state farms and MTS - to complete, in the years 1949 - 1955, the transfer to grass-field and forage crop rotations at all collective and state farms, i.e., to provide by 1955 every collective and state farm with a sowing area of perennial grasses, black, cultivated fallows, as well as sowings of cereal and other crops.

To consolidate the following plan of mastering crop rotations at collective farms:

Republic, Territory Oblast	Total Number of Collective Farms which Adopted Crop Rotations (growing total)						
	1949	1950	1951	1952	1953	1954	1955
Ukrainian SSR	769	900	1800	5000	11000	18000	26615
Voronezh Oblast	116	140	300	800	2000	3200	4336
Kursk Oblast	111	150	300	900	2500	3700	4964
Tambov Oblast	85	120	250	700	1400	2300	3133
Orlov Oblast	35	100	210	500	1700	3000	4132
Krasnodar Territory	122	180	400	750	1250	1800	2201
Stavropol Territory	32	110	230	500	700	900	1126
Rostov Oblast	58	140	300	600	1100	1400	1874

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Republic, Territory Oblast	Total Number of Collective Farms which Adopted Crop Rotations (growing total)						
	1949	1950	1951	1952	1953	1954	1955
Astrakhan Oblast	5	15	35	60	80	110	149
Stalingrad Oblast	72	160	300	600	900	1200	1591
Kuibishev Oblast	52	100	250	600	900	1200	1496
Saratov Oblast	46	90	200	500	800	1300	1832
Chkalov Oblast	91	170	320	800	1200	1600	2080
Crimea Oblast	24	35	100	250	450	700	962
Grozny Oblast	13	20	40	100	150	200	244
Ulianovsk Oblast	21	30	100	250	500	900	1275
Penza Oblast	50	75	150	350	700	1200	1979
Riazan Oblast	60	80	200	800	1800	3000	3886
Tula Oblast	80	150	400	1000	1700	2600	3376
Bashkir ASSR	157	180	300	1000	2000	3200	4370
Mordov ASSR	46	60	130	300	700	1200	1641
Tartar ASSR	80	100	250	900	1900	3000	4247
TOTAL:	2125	3105	6565	17260	35430	55710	77609

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To require the Department of State Farms of the USSR to establish - within a two-months period - a quota for all state farms directed towards the adoption of grass-field crop rotations, with the provision that this task be completed no later than 1955.

47. To require the Councils of Ministers of republics, territorial and oblast political committees, the CC of the Communist Party of the republics, territorial and oblast committees of the Party - to do away with the wrong and harmful practice of extending aid to lagging collective farms in executing the set plan for sowing and the increase of yields, but rather to transfer the task of sowing cereal and other crops from lagging collective farms to those that are advanced in their work. The former practice leads to the break-up of crop rotation, the reduction in yields and production of grain at lagging, as well as at advanced collective farms, hindering in turn the development of the social economy of farms.

48. To require the Departments of Agriculture, State Farms, the leading soviet and party organizations of republics, territories and oblasts to control twice a year - after the spring sowing and in the fall, upon the completion of field work - the course of adopting grass-field crop and forage rotations, and to assist collective and state farms in a more rapid understanding of the work.

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49. To introduce in 1949 a yearly accounting of the situation by July 1st - of the degree of adoption of grass-field crop rotation at collective and state farms.

50. To place the responsibility for the adoption of grass-field and forage crop rotations and the proper planning of sowing areas, during the adoption of crop rotation by collective farms, in oblasts, territories and republics - upon the chairmen of the territorial and oblast executive committees, the Councils of Ministers of republics, the chiefs and senior (oblast) agronomists of provincial, territorial agricultural administrations and the ministers of agriculture of the various republics, and within territories - upon the chairmen of territorial executive political committees, and the superintendents and senior agronomists of territorial agricultural departments.

51. Taking into consideration the fact that the principal cause of the inadequate adoption of grass-field crop rotations lies in the insufficient production of perennial grass seeds at collective and state farms, to require the Departments of Agriculture, State Farms of the USSR, the Councils of Ministers of the RSFSR, of the Ukrainian SSR, and the CC of the KP(b) of the Ukraine, the Councils of Ministers of autonomous republics, the territorial and oblast executive and party committees to:

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a) organize at collective and state farms for the growing of perennial legumes and cereal grass seeds, in order that the needs in grass seeds at collective and state farms be taken care of - at the expense of their production within the territories, oblasts and republics, in quantities essential for the full plan of crop rotation;

b) ensure the careful preparation of the soil for sowing grasses in the most favorable agricultural periods, as well as to provide proper care for seed plots, for the timely gathering of seeds, and in the threshing and drying;

c) In order to increase the supplies of lucerne seeds and to achieve the fastest propagation of the best certified and local varieties of lucerne - to ensure the establishment of the necessary number of seed plots of lucerne in bottom-irrigated lands and estuaries in dry regions, using the seeds obtained from irrigated lands.

52. Considering that summer sowings of lucerne on pure (black) fallows guarantee higher and more stable yields of seeds, to recommend to collective farms the use of summer sowings of lucerne on a wider scale.

The Departments of Agriculture and State Farms of the USSR to set up yearly assignments on summer sowings of lucerne for collective and state farms, and to establish seed plots on bottom and irrigated lands and estuaries, as well as to work out and determine, no later than by

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January 1st, 1950, the adoption of varieties and species of legumes and cereals of perennial grasses for their sowing in grass mixtures.

53. In order to organize a systematic control of supervision over crop rotations and agricultural methods, to require the Departments of Agriculture, and State Farms of the USSR to prepare within the period of one month forms of registration books for sowings in the fields under crop rotations for the benefit of collective and state farms, while the TSSU (Central Statistical Bureau), of the Council of Ministers of the USSR, is required to issue these books by March 1, 1949, in quantities meeting the demands of the Departments of Agriculture and State Farms.

54. To prevent the wash-and blow-out of soils - to recommend to collective and state farms the use of the following methods, along with the establishment of tree shelterbelts:

a) On heavily washed-out soils the introduction of crop rotation with a predominance of perennial legumes and cereals;

b) The plowing, cultivating (aside from pre-sowing), and row sowing across slopes;

c) The setting up, on fields across slopes, of rows of strip-buffers of perennial grasses, to level water holes, and to tinplate water-conducting hollows and steep slopes.

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55. To require the Councils of Ministers of republics, the territorial executive political and district committees, the CC of the Communist Party of republics, and the territorial and oblast committees-to conduct, in 1948 and 1949, monthly courses to raise the qualifications of senior agronomists, senior zoo-technicians, and senior superintendents of the local departments of agriculture, as well as those of senior agronomists of the MTS and state farms, competent to deal with the problems of adopting the system of grass-field crop rotation at collective and state farms (field and forage crop rotations, the organization of forage bases, tree shelterbelts, the system of cultivating the soil and caring for sowing areas, fertilization, the construction of ponds and watersheds);
- the cost of maintaining these courses to be met from local budgets.

To require the Departments of Agriculture and State Farms of the USSR to organize in 1949 - steady, active monthly courses at the Timiriazev Moscow Agricultural Academy, the Scientific-Research Institute of Grain Economy of South-Eastern USSR (city of Saratov), at the V.V. Dokuchaev Scientific-Research Agricultural Institute of the Central Black Earth Belt (Voronezh Oblast), and at the Kharkov Agricultural Institute, in order to raise the qualifications of agronomists and meet the problems of the grass-field system of agriculture.

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ON THE ADOPTION OF THE PROPER SYSTEM OF CULTIVATING THE SOIL

56. To consider the earliest adoption of the system of basic summer plowing of the soil (shallow and deep plowing of lands in the fall by plows equipped with fore-plows) to be the most important task of collective farms, the MTS and state farms - for strenghthening the grass-field agricultural system.

To require the Departments of Agriculture and State Farms of the USSR, the leading soviet, party and agricultural organizations of the republics, territories and oblasts of the steppe and timber-steppe zone of the European USSR to:

a) provide, beginning 1949, for the plowing of fallows and summer fallows exclusively by plows equipped with fore-plows, to a depth of no less than 20-22 cm., and at a smaller arable horizon - to its entire depth with a gradual deepening of the plowed layer;

b) in order to utilize more fully the plowed layer of chernozem soils and to eliminate the soles formed in plowing at the same depth, it is recommended to plow periodically down to a depth of 25-27 cm. within the next few years;

c) to ensure shallow plowing of stubble, - one of the best methods of controlling weeds and pests of agricultural crops - the following

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procedure is to be maintained: in 1949 - no less than 10 per cent and in 1950 no less than 30 per cent of the area to be covered; while beginning 1955, the entire area of stubble under summer plowing and black fallows to be taken care of;

d) to increase the area of black fallows in collective farms by 1950 to three million hectares and by 1955 to nine million hectares; at state farms to increase the area to 280.000 hectares in 1950 and to 570,000 hectares by 1955;

e) to ensure the over-all use - in timber-steppe and moister-steppe regions - of the "layer" cultivation of black fallow, while in dry regions the use of a combination of both "layer" and superficial cultivation is to be practiced, - in the south, no less than four times in the course of one summer and in the rest of the country, no less than three times;

f) to increase the area of summer plowing for summer crops at collective farms by 1950 to 31.5 million hectares and at state farms to 2.7 million hectares, in order that beginning 1951 the sowing of summer crops may be done exclusively on summer plowed land;

g) to take all necessary measures for the storing and proper utilization of moisture in the fields, to preserve the effective conservation of snow by means of "shields", ("shchit"), and other methods,

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for the early spring harrowing of summer plow land and black fallows - within two days from the beginning of field work, using scrapers and "gvozdevki" widely for the purpose.

57. In order to eliminate weed infestation, heavily spread during the war years, in the shortest time possible, and to further the protection of agricultural plants from disease and pests, it is considered essential that along with the agro-technical methods used in controlling weeds and pests of agricultural plants, the work of improving the organization of an over-all compulsory cleaning and disinfecting of the seed material be stimulated, biological and chemical methods of controlling pests and diseases be applied, and marmots be controlled in southern territories, the Northern Caucasus and the South- East, along with all rodents of mice varieties in the regions of their distribution.

ON THE APPLICATION OF ORGANIC AND MINERAL FERTILIZERS

58. To consider a proper system of applying organic and mineral fertilizers in steppe-and timber-steppe territories to be one of the major methods of raising the yield of agricultural crops.

To require the Departments of Agriculture and State Farms of the USSR, the Councils of Ministers of republics, territorial and oblast committees, to undertake measures towards improving storing facilities and the application of manure and other local and mineral fertilizers, particularly

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for sugar beet, and the additional nutrition of cereal, technical crops and perennial grasses.

59. In order to increase the supplies and improve storing facilities of manure and local fertilizers, to require the Councils of Ministers of the Republics, territorial and oblast committees - to establish yearly, for the benefit of collective farms, plans for the construction of manure storage buildings and liquid containers at all collective farms - no later than by 1953.

60. To require the Department of State Farms of the USSR to ensure the proper conservation and full utilization of manure and manure liquid at all state farms of the steppe and timber-steppe zones no later than 1951.

ON ENSURING SOWINGS WITH HIGH-YIELD VARIETAL SEEDS AND THE RADICAL IMPROVEMENT OF THE WORK OF SELECTION AND SEED GROWING

61. To require the Departments of Agriculture and State Farms of the USSR, the Councils of Ministers of republics, territorial and oblast committees, the CC of the Communist Party of republics, territorial and oblast committees to:

a) ensure the sowing of winter and summer cereal crops at all collective and state farms, as a matter of course, beginning 1949, using certified seeds and the best locally adopted varieties suitable to local conditions;

b) Pay particular attention to the over-all raising of standards in agricultural methods on seed plots, in order that every collective and state farm be provided in an adequate degree with superior grade seeds

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of high yield, from certified varieties;

c) in order to improve the standards of selection-seed growing, to ensure the production and fast propagation of new and improved varieties of better yields, and to apply methods for obtaining hybrid seeds of corn, winter and summer wheats and buckwheat for sowing at collective and state farms;

d) ensure the careful preparation of seeds for sowing, the wide application of vernalization of seeds of cereal crops, and the strict observation of accepted norms of sowing.

62. To assign to selection-research institutes the task of systematically improving methods and measures directed towards improving varieties distributed in production by following the Michurin teachings, and to study methods of preserving them from deterioration and degeneration under local conditions.

ON THE DEVELOPMENT OF IRRIGATION AND THE CONSTRUCTION OF PONDS AND WATERSHEDS

63. In order to develop irrigation at collective and state farms on location, - to utilize the waters of local run-offs by way of constructing ponds and irrigation systems that are of much importance in increasing yields of agricultural crops, - to require the Departments of

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Agriculture, and State Farms, the Council of Ministers of the RSFSR and of the Ukraine SSR, and the CC of KP(b) of the Ukraine, the Councils of Ministers of autonomous republics, territorial and oblast committees of the Party to ensure the wide construction of ponds and watersheds at collective and state farms in natural hollows, at river sources, the upper parts of ravines and gullies, and at other natural depressions, - as well as the construction of watersheds on small rivers for the regulation and utilization of the local run-off of water for purposes of irrigation, the raising of fish in hatcheries, and the production of hydroelectric energy for agricultural needs.

64. To approve, for the years 1949-1955, the following plan of construction of ponds and watersheds:

	In Collective Farms	In State Farms
Ukrainian SSR.	15000	960
Voronezh Oblast.	4000	90
Kursk Oblast	4000	30
Orlov Oblast	4000	50
Tambov Oblast.	3000	30
Astrakhan Oblast	--	70

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	In Collective Farms	In State Farms
Krasnodar Territory	1000	170
Rostov Oblast	1000	210
Stalingrad Oblast	1000	190
Saratov Oblast.	1200	250
Kuibishev Oblast.	1000	100
Chkalov Oblast.	1200	230
Grozny Oblast	--	25
Stavropol Territory	500	170
Bashkir ASSR.	300	100
Mordov ASSR	400	10
Tartar ASSR	700	70
Crimea Oblast	350	50
Ulianovsk Oblast.	400	50
Penza Oblast.	500	30
Riazan Oblast	1000	3
Tula Oblast	750	40
TOTAL:	41300	2928

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65. To entrust the Councils of Ministers of the RSFSR, the Ukrainian SSR, and those of the autonomous republics, the territorial and oblast committees - with guiding the planning and constructing of ponds and water repositories, the work to be preformed by collective farmers.

66. The cost of planning-research work and the technical supervision over the construction of the irrigation systems, ponds and pump-power equipment, done at collective farms - to be borne by the government.

67. To require the Departments of Agriculture and State Farms of the USSR, the Councils of Ministers of the RSFSR, the Ukrainian SSR, the Daghestan ASSR, Khabardin and Bashkir ASSR, the Stavropol and Krasnodar territorial committees, the Stalingrad, Saratov, Kuibishev, Astrakhan, Rostov, Grozny, Chkalov, and Crimea oblast committees to:

a) improve the exploitation of the irrigation systems, to organize the planned utilization of waters at collective and state farms, and to ensure during 1949 and 1950 the full utilization of irrigated lands for sowing and plantings, set apart from the agricultural turnover;

b) in approving the technical projects and estimates for the construction of irrigation systems to confirm, simultaneously, plans of the agricultural usage of irrigated lands.

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68. To require the Council of Ministers of the Ukrainian SSR and the CC of the KP(b) of the Ukraine, the Stalingrad, Saratov, Kuibishev, Chkalov, Astrakhan, Voronezh, Kursk, Orlov, Tambov, Penza, and Ulianovsk oblast executive committees of the Party, and the Krasnodar and Stavropol territorial executive committees of the Party - to ensure a wide development of estuary irrigation, to re-construct previously existing estuaries and to extend assistance to collective and state farms for the construction of new estuaries and the organization of estuary irrigation.

69. To require the Departments of Agriculture and State Farms of the USSR and the local soviet and party organizations to devote particular attention to the development of free-flowing irrigation, that does not require much financial outlay, as well as to the full utilization of "poimennii" bottom lands for the sowing of valuable crops and the creation of highly productive forage appendages.

70. To require the Department of Finance of the USSR to extend to the collective farms, engaged in irrigation work, extensive long-term credits in amounts and on terms established for collective farms in Central Black Earth oblasts.

71. To introduce, beginning 1949, an accounting system on the agricultural utilization of irrigated lands at collective and state farms. To require of the TSSU (Central Statistical Bureau) of the Council of

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Ministers of the USSR, and the Departments of Agriculture and State Farms of the USSR, to prepare forms of accounting records and set the dates for submitting them.

ON THE MECHANIZATION OF AGRICULTURAL WORKS, FOREST PLANTINGS AND THE CONSTRUCTION OF PONDS AND WATERSHEDS

72. For the purpose of a wide mechanization of labor on tree shelterbelt planting and the construction of ponds - to require the Departments of Agriculture and Forestry of the USSR to organize - in 1949 to 1951 - a total of 570 tree shelterbelt stations, among these -

a) 270 stations under the supervision of the Department of Agriculture of the USSR, with the following distribution among territories, oblasts and republics:

Republic, Territory Oblast	TOTAL	Among these: in 1949	1950 - 1951
Ukrainian SSR.	39	9	30
Voronezh Oblast.	16	3	13
Kursk Oblast	16	4	12
Tambov Oblast.	10	3	7
Orlov Oblast	22	3	19
Krasnodar Territory.	7	3	4

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Republic, Territory Oblast	TOTAL	Among these: in 1949	1950 - 1951
Stavropol Territory	12	3	9
Rostov Oblast	11	3	8
Astrakhan Oblast	2	1	1
Stalingrad Oblast	20	3	17
Saratov Oblast	22	3	19
Kuibishev Oblast	16	2	14
Chkalov Oblast	20	3	17
Crimea Oblast	2	1	1
Grozny Oblast	2	1	1
Ulianovsk Oblast	4	1	3
Riazan Oblast	12	2	10
Tula Oblast	12	2	10
Penza Oblast	12	2	10
Bashkir ASSR	6	3	3
Tartar ASSR	4	2	2
Mordov ASSR	3	1	2
TOTAL:	270	58	212

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b) 300 stations under the supervision of the Department of Forestry of the USSR; among these 50 stations to be established in 1949, 110 - in 1950, and 140 stations in 1951.

To require the Departments of Agriculture and Forestry of the USSR, together with the Councils of Ministers of the RSFSR, the Ukrainian SSR, and those of autonomous republics, territorial and oblast executive committees to determine within a three months period the locations and regions of activity of the new tree shelterbelt stations.

The Departments of Agriculture and Forestry of the USSR are directed to approve name lists and the dates set for assembling tree shelterbelt stations.

73. To entrust the tree shelterbelt stations of the Department of Agriculture of the USSR with the production of the following work, under agreements with the collective farms: the preparation of the soil for tree planting, the planting itself, the assistance extended in the after-care of field-shelterbelts, and the construction of ponds and watersheds.

74. To entrust the tree shelterbelt stations of the Department of Forestry of the USSR with the work of planting and sowing the government tree belts, as well as with the labor spent on tree plantings and their care on the lands of the Goslesfond, Gosfond (government fund), along river banks, the affore-station of sands, ravines and gullies.

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75. To approve the following typical equipment for use at tree shelterbelt stations:

Names of Equipment	Number of Pieces
Tractors S-80.	2-3
Tractors HATI.	8-12
Tractors KD-35	3-5
Tractors U-2	2-3
Tractors - Gardening "TOP"	3-5
5-Gangs Plows P-5-35	4-6
3-Gang Plows P-3-30-P.	8-15
Cultivator Plows	2-3
Zig-Zag Harrows.	60-100
Cultivators KUTS -4,2.	3-5
Cultivators KUTS -2,8.	5-8
Tree Planting Machinery.	18-30
Draw Bars for Tree Planting Machinery.	3-6
Disk Stubble Tillers	3-5
Tree Seeding Machinery	4-7
Stump Pullers UL - 2.	1-2

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Names of Equipment	Number of Pieces
Stump Pullers UL - LS - 2	1-2
Sprinklers NDU (Overhead)	1
Tractor Type Covered Sprinklers	1
Tractor Type Overhead Sprayers	1
Auto-trucks GAZ - 67	1
Auto-trucks ZIS - 5 (3-ton)	1-2
Auto-trucks GAZ - AA (1-1/2 ton)	2
Auto-cisterns	1-3
Auto-mobile Shops of the Type "V"	1-2
Ditchers	1-3
7-Foot Graders	2
Bulldozers	1
Motor Rollers	2
Creeping Scrapers - Automatic Power Rotary	2
Stationary Oil - Tara (capacity in tons)	60-100
Excavators 1/2 M^3	1
Electro-Cooking (Assembly) Aggregates	1
Special Tree Cultivators	16-28

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Names of Equipment	Number of Pieces
Overhead Draw Bars for Tree Cultivators.	4-7
Auto-trailers - 2-Wheeled, 3-ton	1-2
Auto-trailers - 1-Wheeled, 1-1/2 ton	2-4

76. To require the Department of State Farms of the USSR to organize at state farms engaged in establishing tree shelterbelts, special agro-forest-meliorative brigades for the sowing and growing of trees.

To approve the following typical equipment for the agro-forest-meliorative state farm brigade:

Designation of Equipment	Number of Pieces
Tractors S - 80.	1
Tractors KD - 35	1
Tractors U - 2	1
Tractors-Gardening "TOP".	2
5-Gang Plow P - 5 - 35	1
3-Gang Plow P - 3 - 30 - P	1
Plows "Plantazhnii" - (planting).	1
Zig-Zag Harrows	15

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Designation of Equipment	Number of Pieces
Cultivators KUTS - 4,2.	1
Cultivators KUTS - 2,8.	2
Tree Seeders.	7
Draw Bars for Tree Seeders.	1
Disk Stubble Tillers.	1
Tree Seeders.	1
Stump Pullers UL - 2	1
Special Tree Cultivators.	4
Overhead Draw Bar for Tree Cultivators.	1

77. To require the Department of Agriculture of the USSR to work out and submit within two months to the Council of Ministers of the USSR a typical agreement to be entered into between tree shelterbelt stations and collective farms with regard to tree planting performed by the stations, the regulations concerning the wages of tractor drivers, trailer operators, brigade members, operators of tree seeding machinery, as well as the proposals concerning the order of distributing premium payments to workers at tree shelterbelt stations.

78. To require the Department of Finance of the USSR to extend long-term credits to collective farms for a period of ten years in amounts of

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the value of works in tree growing, repayments to begin in the fifth year.

79. To require the Departments of Agricultural Machine Construction, Auto-mobile and Tractor Industry, and Transport Machine Construction, the Departments of Road Construction and other industrial departments engaged in executing orders for agricultural needs, - to guarantee the absolute fulfillment of the approved plan of producing agricultural machinery, their high quality and a more rapid mastering of new improved agricultural machinery and equipment - in order to ensure the wide mechanization of field and tree shelterbelt works and the raising of their quality.

80. To require the Departments of Agriculture, State Farms, Agricultural Machine Construction, and Forestry - to work out and submit to the Council of Ministers of the USSR - within a two months period - suggestions for the improvement of the machines they produce and concerning the production of new machinery which is to conform to the requirements of the Grass-Field System of Agriculture, and to devote particular attention to:

a) increasing the output and improve the present construction of tractor plows, to ensure high grade plowing of the grass layer and the full coverage of weeds and vegetative residue which remain uncovered

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following disking, during the basic plowing to necessary depths;

b) to increase the disk tiller output and to work out the construction of a special aggregate for a simultaneous gathering of harvests and the disking of stubble fields;

c) the mass production of scrapers, "shleifov" and "gvozdëvok", primarily, at local manufacturing enterprises;

d) to increase the production of plowshare tillers and foot (claw, clamp) cultivators for fallows and summer fallows;

e) to increase the production of combined seeders for the sowing of cereal crops with grasses and cereal, and technical crops with mineral fertilizers;

f) to increase the production of heavy and medium weight teeth harrows for harrowing winter crops and perennial grasses after cutting;

g) for a considerable increase of the production of manure-distributors, seeder-fertilizers, and plant nutrition equipment;

h) to increase the production of grain-cleaning machinery and the complicated grain-cleaning equipment, and their complete provision with corresponding sieves and strainers;

i) to increase the output of tree planting machines, horse and hand seeders for woody and shrub seeds, the organization of the production of tractor and horse plows, equipped with soil diggers and digging plows, and tractor and horse cultivators, - for tree plantings and seeding at nurseries.

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ON THE ESTABLISHMENT OF A MAIN ADMINISTRATION OF FIELD SHELTERBELT FOREST GROWING, ATTACHED TO THE COUNCIL OF MINISTERS OF THE USSR

81. In order to ensure the execution of the tasks of establishing government tree shelterbelts, as well as field-shelter collective and state farm forest belts, and in order to control the operation of the works - a Main Administration of Field Shelter Forest Growing is to be set up for the Council of Ministers of the USSR, to carry the following duties:

a) to guide the work of establishing government tree shelterbelts, collective and state farm field-shelterbelts, under the supervision of the Departments of Agriculture, Forestry, and State Farms of the USSR, respectively;

b) to control the execution of the work by the Ministries, administrations, the Councils of Ministers of the republics, the territorial and oblast executive committees, assigned by the Government, with regard to field shelter forest growing and the submission of reports to the Government on the progress made;

c) to submit for confirmation to the Government proposals concerning the planning of field shelter forest growing and all scientific-research work performed in this connection;

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d) the systematization and compilation of all scientific and technical achievements, and experimentation secured by collective and state farms in actual field work with respect to field shelter forest growing;

e) to arrange for the preparation of qualified cadres on high, medium and mass levels - for the work on field shelter forest growing.

The Instructions of the Main Administration of Field Shelter Forest Growing, attached to the Council of Ministers of the USSR, - relative to questions entering into their sphere of competence, to be considered binding for all departments and administrations.

82. To require the departments, administrations, Councils of Ministers of republics, territorial and oblast executive committees - to submit, upon the demand of the Main Administration, information and reference data pertaining to all questions (problems) connected with field shelter forest growing.

83. To permit the Main Administration of Field Shelter Forest Growing, attached to the Council of Ministers of the USSR, to publish a monthly journal on the subject of field shelter tree growing.

End of Pamphlet.

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U. S. S. R. Sovet Ministrov. O khode vypolneniia postanovleniia...[On the progress of carrying out the decree of the Soviet of Ministers...in regard to the "Plan on sholterbelts, introduction of crop rotations, construction of ponds and reservoirs for guaranteeing high and stable harvests in the steppe and forest-steppe districts of European U. S. S. R."] Moskva, 1949. 30 p. 281.179 Un352K

Translated from the Russian by
S. D. Monson

The Decree of the Council of Ministers of the USSR and of the CC of the VKP(b)[Central Committee of the Communist Party of the Soviet Union], dated October 20, 1948, concerning the "Plan on Sholterbelts, Introduction of Crop Rotation, Construction of Ponds and Reservoirs for Guaranteeing High and Stable Harvests in the Steppe and Forest-Steppe Districts of European USSR" - was met with considerable approval by the laboring classes; it acted as a political inspiration to all collective farmers, workers at the MTS, state and forest farmers and nursery personnel, and added renewed encouragement to their work. In numerous letters addressed to comrade Stalin, the collective and state farmers, both men and women, the workers of the MTS and tree nurseries, agricultural and forestry specialists of the various republics, territories and provinces of the steppe-and timber-steppe regions of the USSR have accepted the obligation to fulfill and overfulfill - in time - the government planned tree sholterbelt plantings, grass field crop rotation, the construction of ponds and watersheds - to further high and stable yields.

Collective, state and forest farms of the steppe-and timber-steppe zones of the European USSR have in their attempt to accomplish the large volume of work, scheduled in the decree of the Council of Ministers and

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the CC of the VKP(b), produced in the fall of 1948 a considerable amount of work - in planting tree shelterbelts, prepared the soil for 1949, collected seeds of woody and shrub varieties, set-up tree nurseries, and introduced grass-field crop rotations.

According to reports made by the Main Administration of Tree Shelter Growth, attached to the Council of Ministers of the USSR, and those submitted by the Departments of Agriculture, Forestry and State Farms of the USSR, the local soviet and party organizations, the results of the fulfillment of the decree of the Council of Ministers and the CC of the VKP(b), with respect to the above plan, are indicated in the data stated below:

I

ON ESTABLISHING A SYSTEM OF VAST GOVERNMENT TREE SHELTERBELTS

The Department of Forestry of the USSR and the All-Union Lenin Academy of Agricultural Sciences have begun the organization of research studies for the presentation of technical plans concerning the planting of government tree shelterbelts.

Taking part in the latter work are the All-Union Lenin Institute of Agricultural Sciences, Institutes of the Academy of Science of the USSR, and those of the Departments of Agriculture and Forestry of the USSR. Participating in the work at the "trassa" (routes) of government tree shelterbelts will be 94 forest farms which, beginning with the spring of 1949, will lay the preliminary work of planting tree shelterbelts. The Department of Forestry of the USSR worked out a plan to conduct the work along routes of government tree shelterbelts for 1949.

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The Departments of Agriculture and Forestry of the USSR have organized and commenced the work of six expeditions to be engaged in selecting lands for these belts - in the following sections:

Penza - Ekaterinovka - Veshenskaia - Kamensk on the Northern Donets; on the watershed divides of the rivers Khopra and Medveditsa, Kalitva and Berezovaia;

Kamyshin - Stalingrad; on the watershed divides of the rivers Volga and Ilovlia;

Stalingrad - Stepnoi - Cherkesk and Saratov - Astrakhan;

Chapaevsk - Vladimirovka;

Gora Vishnevaia - Chkalov - Uralsk - Caspian Sea; along the banks of the river Ural;

Voronezh - Rostov-on-the-Don; along both banks of the river Don;

From the city of Belgorod to the river Don; along both banks of the river Northern Donets;

One hundred and twenty specialists and scientific workers were drafted for the work of these expeditions.

The Scientific-Research Institutes of the Academy of Science of the USSR - those of Soils, Geography, Geology, Forestry, Botany and Microbiology, the biological department of the Lomonosov Moscow Government University of the order of Lenin, the Institute of Forestry, attached to the Department of Forestry, the All-Union Institute of Agro-melioration, attached to the Department of Agriculture, and others - are preparing

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material that reflects upon soil-climatic conditions of the individual government tree belts.

The Department of Forestry of the USSR has directed into the regions of the group of lakes at the basin of the river Sarpa - two detachments of scientists for the purpose of studying tree growth conditions, aiming at the afforestation of the above lakes and the banks of the river Sarpa. These expeditions have at present concluded research work in the field.

The Department of Forestry has also completed the work of establishing all valuable forest massives in the steppe-and timber-steppe regions of the European USSR. These areas occupy 2,242 thousand hectares of forests.

The Department has also prepared and is engaged in carrying out measures intended to preserve and improve these forests; they presuppose a strict control over the felling of trees of the first rank, as well as other measures in caring after the forests.

To supervise the work of planting government tree shelterbelts, the Department of Forestry of the USSR has set up local administrations in the cities of Saratov, Stalingrad and Uralsk, which are already functioning.

In proceeding with the research and planning work of establishing government tree shelterbelts and the afforestation of sands and ravines, the Department of Forestry of the USSR has set up the "Agrolesproekt", intended to unite all research related to the project; this organization has already commenced its work.

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II

ON THE DEVELOPMENT OF TREE SHELTERBELTS ON THE FIELDS OF COLLECTIVE AND STATE FARMS

The Departments of Agriculture, Forestry and State Farms of the USSR, the soviet and party organs of oblasts, territories and republics of the steppe-and timber-steppe zone of the European USSR are engaged in preparing unified plans for afforestation. These plans have already been completed in the Ukrainian SSR, the Stalingrad, Voronezh and Kuibishev oblasts, and the Bashkir ASSR. Then work will be completed in the rest of the republics, oblasts and territories of the steppe-and timber-steppe regions of the European USSR in the near future.

One may obtain a sample view of the uniform plan of establishing a grass-field system of agriculture from the published map-plan on field tree shelterbelts, the afforestation of ravines and sands, the construction of ponds and watersheds, and the introduction of grass-field crop rotations as proposed by the Novo-Annenski district of the Stalingrad oblast, already approved by the Department of Agriculture of the USSR, (see attached map).

In 1948, the collective, state and forest farms of the steppe-and timber-steppe zone of the European USSR have planted tree shelterbelts on an area of 198.9 thousand hectares, or fulfilled 103.6 percent of the plan.

Collective farms have planted 48.8 thousand hectares, state farms - 3.3 thousand hectares, forest farms - 146.8 thousand hectares.

The sowing and planting of trees, according to republics, territories and oblasts, is expressed in the following figures:

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(in thousands of hectares)

Oblast, Territory Republic	Trees planted in forest, state and collective farms	
	in 1948	percent of plan
Voronezh Oblast	10.4	109
Kursk Oblast	6.6	118
Orlov Oblast	4.2	105
Tambov Oblast	9.9	139
Riazan Oblast	5.0	96.4
Tula Oblast	2.2	88.0
Mordov ASSR	3.8	103
Astrakhan Oblast	0.6	66.7
Kuibishev Oblast	3.9	88
Saratov Oblast	4.4	82
Stalingrad Oblast	7.6	129
Chkalov Oblast	4.7	104
Bashkir ASSR	7.6	108
Ulianovsk Oblast	4.3	108
Tartar ASSR	5.8	93.5
Penza Oblast	5.5	102
Krasnodar Territory	1.6	36
Rostov Oblast	3.4	45
Stavropol Territory	2.5	54

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(in thousands of hectares)

Oblast, Territory Republic	Trees planted in forest, state and collective farms	
	in 1948	percent of plan
Grozny Oblast	0.2	29
Crimea Oblast	1.5	69
Ukrainian SSR	103.5	121

Areas of plantings done in 1948 at collective farms, according to republics, territories, oblasts are referred to in the following figures:

(hectares)

Oblast, Territory Republic	in 1948
Voronezh Oblast	3,897
Kursk Oblast	2,548
Orlov Oblast	2,044
Tambov Oblast	4,687
Riazan Oblast	302
Tula Oblast	106
Mordov ASSR	435
Astrakhan Oblast	168
Kuibishev Oblast	2,430
Saratov Oblast	1,980
Stalingrad Oblast	4,571

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Oblast, Territory Republic	(hectares) in 1948
Chkalov Oblast	3,810
Bashkir ASSR	2,220
Ulianovsk Oblast	624
Tartar Oblast	906
Penza Oblast	697
Krasnodar Territory	693
Rostov Oblast	933
Stavropol Territory	1,568
Grozny Oblast	71
Crimea Oblast	257
Ukrainian SSR	14,443

Significant successes in planting tree shelterbelts in the fall of 1948 were achieved by the collective farms of the Ukrainian SSR, which accomplished 137 percent of the plan, those of Tambov Oblast - 156 percent; Stalingrad Oblast - 134 percent; Kursk - 127 percent; Voronezh - 11 percent.

The collective farms of the Konstantinov district of Stalin oblast sowed 200 hectares of forest in the fall of 1948, using the nest method, and planted 40 hectares of tree shelterbelts.

The collective farms of the Irkleev district of Poltava oblast planted over 200 hectares of tree shelterbelts.

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In the Salsk district of Rostov oblast 219 hectares of tree shelterbelts were planted in the fall of the current year alone; also 134 hectares of gardens, in addition to work done on cleaning and restoring plantings of former years on an area of 1,800 hectares. Each collective farm of the district had assigned working units for the planting and after its care.

The collective farms of the Elan-Kolenov district of Voronezh oblast had planted in 1948 - 145 hectares of tree shelterbelts in place of the planned 28 hectares; the collective farms of the Podgorenni district of the same oblast planted 157 hectares of tree belts as against the required 69 hectares.

The collective, state and forest farms of the steppe-and timber-steppe region of the European USSR prepared the soil for tree plantings to be done in 1949, in the amount of 269.5 thousand hectares; of these 88.0 thousand hectares were prepared by collective farms; 8.7 thousand hectares by state farms, and 172.8 thousand hectares by forest farms, - which points to the fulfillment of the yearly plan by the spring of 1949.

The status of the work of preparing soil for tree plantings during 1949, according to republics, territories and oblasts, is presented in the following figures:

(thousands of hectares)

	Plan of spring and fall tree plantings for 1949, at collective, state and forest farms	Preparation of soil at collective, state and forest farms for spring tree plantings
Ukrainian SSR	102.2	93.9
Voronezh Oblast	16.8	15.6
Kursk Oblast	13.8	12.2

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(thousands of hectares)

	Plan of spring and fall tree plantings for 1949, at collective, state and forest farms	Preparation of soil at collective, state and forest farms for spring tree plantings
Riazan Oblast	5.5	7.6
Orlov Oblast	8.4	6.4
Tula Oblast	2.6	2.9
Tambov Oblast	12.2	9.4
Kuibishev Oblast	9.1	8.8
Astrakhan Oblast	2.0	1.8
Saratov Oblast	8.7	13.3
Bashkir ASSR	10.3	9.4
Chkalov Oblast	7.9	11.7
Ulianovsk Oblast	8.3	7.7
Stalingrad Oblast	9.8	20.8
Penza Oblast	6.0	7.4
Mordov ASSR	5.9	5.1
Tartar ASSR	8.0	7.4
Krasnodar Territory	6.2	5.6
Rostov Oblast	13.4	11.8
Stavropol Territory	11.3	6.7
Grozny Oblast	1.8	1.5
Crimea Oblast	4.8	2.5
TOTAL:	275.0	269.5

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In 1948 collective and forest farms of the Ukrainian SSR prepared areas of soils for spring tree plantings in 1949 - one and a half times as large than those of 1947. In the regions of the South-East of the USSR: in the Stalingrad, Saratov, and Chkalov oblasts - soil prepared in the fall of 1948 exceeded considerably the yearly quota in tree plantings set for 1949.

Conforming to the plan of work of tree plantings, the collective and state farms of the steppe-and timber-steppe zone of the European USSR continue to carry on the extensive task of organizing working units for tree plantings, while the collective farms have already arranged for over 20,000 of these units. Collective farms of the Ukrainian SSR have 7,005 units in working order; the collective farms of Kursk oblast - 3,000; those of Voronesh oblast - 2,250; Tambov oblast - 1,150; Rostov oblast- 1,105; Chkalov oblast - 1,025 units.

In conformance with the plan for the fall-winter period of 1948-1949 at republics, territories and oblasts of the steppe-and timber-steppe zone of the USSR, it is planned to train working units at two-weeks courses numbering 72,000 people for tree plantings at collective and state farms. The Departments of Agriculture, and State Farms of the USSR have prepared and forwarded to the various sections study plans and programs for these training courses.

A mass training of similar working units is at present in progress at oblasts, territories and republics of the steppe-and timber-steppe zone

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of the European USSR. At Orlov oblast 980 units have already been trained and at Kursk oblast - 600 units; a considerable part of training is taking place in the Ukrainian SSR.

In conformance with the decree of the Council of Ministers of the USSR and the CC of the VKP(b), the Departments of Agriculture and State Farms of the USSR expect to provide three months training courses for 7,200 agro-forest-meliorators at oblast agricultural schools. The Ukrainian SSR has already undertaken the training of 480 agro-forest-meliorators; Orlov oblast - of 180; Voronezh oblast trains 60 agro-forest-meliorators and 86 junior foresters; in Ulianovsk oblast the training of 100 agro-forest-meliorators has been initiated at two agricultural schools.

It is contemplated to train 780 men master agro-forest-meliorators at the schools and technical institutions of the Department of State Farms of the USSR; of these 520 men are already in training.

In order to provide collective, state and forest farms and the tree shelterbelt stations, as well as the MTS, and organs of the agricultural and forest economies with specialists in agro-forest-meliorative work and forestry in general, the Department of Higher Education of the USSR plans to increase considerably the output of specialists on the higher and medium educational levels for work on agro-forest-melioration, forestry and mechanization.

In 1949 the number of students entering higher agricultural and forestry schools will be increased by 1,025, while at technical schools the number of first year students will be increased to 4,180. The 1949

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class in specialists on agro-forest-melioration and forestry is expected to consist of 1,650 men at the higher educational institutions and 3,440 at the technical schools.

In order to increase the number of specialists graduating from the higher schools in agro-forest-melioration and forestry in the next few years, the Department of Higher Education considers the opening, at the beginning of the 1949-1950 school year, of sections on agro-forest-melioration at four educational schools of higher learning and to introduce courses in mechanics at two educational schools. The Departments of Agriculture and State Farms of the USSR will reorganize eight agricultural technical schools into agro-forest-meliorative ones and will open in 1949-1950 departments for agro-forest-meliorative and mechanics studies at twelve agricultural and forestry technical schools.

The Department of Higher Education of the USSR reviewed the study plans and programs of the agricultural departments of all schools. The number of study hours devoted to the grass-field system of agriculture has been increased at the agricultural, hydro-meliorative departments and the department for the mechanization of agriculture at higher educational institutions. Students enrolled at these departments will receive practical training in planting tree shelterbelts, their care, and the construction of ponds and watersheds.

To conform with the decree of the Council of Ministers of the USSR and the CC of the VKP(b), a bureau of forest melioration has been set up as part of the main administration for land planning and crop rotation at

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the Department of Agriculture of the USSR, while at the Department of State Farms sections of agro-forest-melioration, forestry and fruit growing have been organized; the Department of State Farms of the RSFSR and the State Farms of the Ukrainian SSR have set up sectors on agro-forest-melioration, forestry and fruit growing.

Sectors on agro-forest-melioration have been organized at the departments of agriculture of the various autonomous republics and at oblast and territorial administrations of agriculture. The larger part of these has been filled by leaders and specialists. Work in selecting and completing the staffs of agro-forest-meliorative departments at local departments of agriculture, the MTS and state farms - is now in progress. The position of a senior agro-forest-meliorator has been established at 697 local departments of agriculture of the steppe-and timber-steppe zone of the European USSR; and 484 specialists have already been selected for these positions. Posts of agro-forest-meliorators are being contemplated at 1,212 MTS of the steppe-and forest-steppe zones of the USSR, where at the present time 609 agro-forest-meliorators have been gathered. The trusts of the Department of State Farms of the USSR have selected 40 senior agro-forest-meliorators out of 46, scheduled for appointment; the state farms chose 622 men out of a number of 835, scheduled for appointment. The Departments of State Farms, Agriculture and Forestry of the USSR are undertaking measures to establish experimental fields of tree belts by nest method in 1949 at every scientific and experimental institution, as well as at the forest farms of steppe-and timber-steppe regions.

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The All-Union Lenin Academy of Agricultural Sciences has worked out directions for conducting sowings of forest belts with the use of the nest method.

III

ON THE STABILIZATION AND AFFORESTATION OF SANDS

In order to fulfill the plan approved for 1949 on the stabilization and afforestation of sands on collective farm lands, on an area of 22.4 thousand hectares, the Department of Forestry of the USSR commenced the survey of sandy areas and the preparation of seed material, in which pine and red Salix L. were to predominate. Methods for a wide utilization of sowings of the hybrid sorghum-gumaev on sands, along with the desert Agropyrum and other grasses are being worked out in order that in the next few years areas occupied by sands may be transformed into pastures and hay making appendages. The Stavropol experimental field has prepared sorghum-gumaev seeds for a planting area of 400 hectares. It is contemplated to prepare seeds of this hybrid for a total area of one thousand hectares.

IV

ON THE GROWING OF SEED MATERIAL IN GOVERNMENT, COLLECTIVE AND STATE FARM TREE NURSERIES

In order to establish tree shelterbelts in 1949 for the work of the afforestation of ravines, gullies, lake and river banks in the steppe-and timber-steppe regions of the European USSR, at government tree nurseries

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for specific republics, territories and oblasts - seed material in the amount of 1868.5 million items has been prepared.

The following figures refer to the availability of seed material for spring tree plantings in 1949, according to republics, territories and oblasts:

	(in millions)
Voronezh Oblast.	112.1
Kursk Oblast	71.1
Orlov Oblast	39.5
Tambov Oblast.	69.6
Riazan Oblast.	67.0
Tula Oblast.	17.6
Mordov ASSR.	60.5
Astrakhan Oblast	4.8
Kuibishev Oblast..	33.7
Saratov Oblast	22.9
Chkalov Oblast	17.7
Stalingrad Oblast..	22.4
Bashkir ASSR	61.1
Ulianovsk Oblast	73.4
Tartar ASSR.	51.7
Penza Oblast	63.3
Krasnodar Territory.	9.9
Rostov Oblast.	36.8

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	(in millions)
Stavropol Territory.	5.4
Grozny Oblast.	2.9
Crimea Oblast.	10.1
Ukrainian SSR.	1015.0
TOTAL:	1868.5

The Department of Agriculture has set up government and collective farm nurseries that occupied 2,885 hectares in 1948; the Department of State Farms nurseries occupy - 248 hectares, and those of the Department of Forestry - 3,562 hectares.

In addition, lands were prepared for nurseries to operate by the spring of 1949, on an area of 9,790 hectares, of which 3,818 hectares were to belong to nurseries of the Department of Forestry, 5,021 hectares to the Department of Agriculture and 951 hectares to nurseries under the management of the Department of State Farms.

In 1948 the Departments of Forestry and Agriculture organized 40 and 21 government agro-forest-meliorative nurseries on areas of 5760 hectares and prepared for the establishment of 72 government agro-forest-meliorative nurseries in 1949.

The Councils of Ministers of the RSFSR, the Ukrainian SSR, and those of autonomous republics, the territorial and provincial executive committees of the steppe-and timber-steppe zone of the European USSR have attended to the organization of collective farm tree nurseries. Collective farms which

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will have their own nurseries have been determined at present. 1,246 nurseries occupying an area of 3,192 hectares have been organized by the collective farms of the Ukrainian SSR in 1948; Tambov oblast organized 81 nurseries on 61 hectares; Voronezh oblast has 42 collective farm nurseries.

The 1949 spring sowing at forest and agro-forest-meliorative nurseries has been assured of seeds of woody and shrub varieties.

The Departments of Agriculture, Forestry and State Farms, as well as the local party, soviet, agricultural and forest organizations have carried out a vast amount of work in the fall of 1948 with respect to the collecting of seeds of woody and shrub varieties, particularly oak, as the most valuable, perennial variety.

A total of 7,825.2 tons of seeds of woody and shrub, fruit and technical varieties has been prepared in steppe-and timber-steppe regions of the European USSR, among these 6,225.3 tons of oak acorns.

Of these:

a) the Department of Forestry of the USSR has stored 5,669.9 tons of seeds, of which 4,741.0 tons were oak acorns;

b) the Department of Agriculture of the USSR - 1,887.3 tons; of oak acorns - 1,256.3 tons;

c) the Department of State Farms of the USSR - 268.0 tons; of which 228.0 tons were oak acorns.

The quantities of prepared seeds of woody and shrub varieties by the Departments of Forestry and Agriculture, according to republics, territories,

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and oblasts are expressed in the following figures:

(in tons)

	Total	Including oak acorns
Voronezh Oblast	499.4	405.2
Kursk Oblast	634.4	543.0
Orlov Oblast	240.2	216.4
Tambov Oblast	636.7	582.6
Riazan Oblast	241.6	226.0
Tula Oblast	149.3	136.2
Mordov ASSR	35.6	27.0
Astrakhan Oblast	22.1	12.0
Kuibishev Oblast	562.6	509.9
Saratov Oblast	547.7	483.0
Chkalov Oblast	179.8	146.5
Stalingrad Oblast	359.7	247.6
Bashkir ASSR	158.0	132.2
Ulianovsk Oblast	237.8	216.7
Tartar ASSR	256.6	206.0
Penza Oblast	488.0	460.6
Krasnodar Territory	576.8	219.6
Rostov Oblast	197.0	77.7
Stavropol Territory	231.0	135.8
Grozny Oblast	93.3	48.6
Crimea Oblast	40.0	18.4
Ukrainian SSR	1,389.6	946.3

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The preparation and storing of seeds of woody and shrub varieties is being continued.

In order to improve the development of tree-seeding, the Department of Forestry of the USSR has segregated tree-seeding lots on an area of 107.9 thousand hectares at its forest farms, pine to predominate on 26.3 thousand hectares, spruce - on 1.5 thousand hectares, oak - on 13.5 thousand hectares, and Evonymus L. - on 61.6 thousand hectares.

V

ON THE INTRODUCTION AND ADJUSTMENT OF GRASS-FIELD CROP ROTATIONS

Grass-field crop rotations have been introduced by 60,553 collective farms located in steppe-and timber-steppe regions of the European USSR (actual fields have been laid out and plans of using them made at the following sections):

Names	Number of collective farms where crop rotations have been introduced.	Percent in relation to collective farms.
Voronezh Oblast	2,969	68
Kursk Oblast	2,457	49
Orlov Oblast	2,757	67
Tambov Oblast	2,611	85
Riazan Oblast	3,886	100
Tula Oblast	2,345	69
Mordov ASSR	1,534	93

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Names	Number of collective farms where crop rotations have been introduced.	Percent in relation to collective farms.
Astrakhan Oblast	78	52
Kuibishev Oblast	1,496	100
Saratov Oblast	1,614	88
Chkalov Oblast	2,006	96
Stalingrad Oblast	1,591	100
Bashkir ASSR	3,579	82
Ulianovsk Oblast	1,230	96
Tartar ASSR	4,244	99.9
Penza Oblast	1,752	89
Krasnodar Territory	1,915	87
Rostov Oblast	1,701	91
Stavropol Territory	1,126	100
Grozny Oblast	168	69
Crimea Oblast	589	61
Ukrainian SSR	18,905	71

Grass-field crop rotations will be introduced in 1949 at 10,866 collective farms, and the Department of Agriculture of the USSR conducts preparatory work at present to ensure the fulfillment of the established plan of introducing crop rotations.

At collective farms of the steppe-and timber-steppe regions of the European USSR field-grass crop rotations are introduced with black fallows

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and, as a rule, with two fields of a mixture of perennial legumes and cereal grasses, while the collective farms in drier regions lay out three fields of grasses.

To ensure the livestock of forage the collective farms have, in addition to introducing field crop rotation, used forage field-grass crop rotations - meadow-pasture and pre-farm ones[2] ("prefermskie").

Field crop rotations have been adopted by 1,204 collective farms of the steppe-and timber-steppe zone of the European USSR, i.e. in an area of plantings of perennial grasses, black and occupied fallows. Sowing areas of grain and other crops have been made to conform to accepted crop rotations. At present the collective farms of this zone conduct a verification (check) of the plans of transfer to field-grass crop rotations in order that sowings of agricultural crops be done in the corresponding fields of adopted crop rotations in 1949.

As of December 20, 1948, the collective farms of the steppe-and timber-steppe zones of the country have planted 179,230 centners of perennial grasses, as against 75,200 centners in 1947; of these at:

	In 1948, centners	In 1947, centners
Ukrainian SSR	127,700	55,200
Voronezh Oblast	5,100	1,100
Kursk Oblast	7,700	1,300
Tambov Oblast	600	200
Orlov Oblast	1,500	600

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	In 1948, centners	In 1947, centners
Krasnodar Territory	3,700	1,800
Stavropol Territory	1,700	1,500
Rostov Oblast	6,600	2,000
Astrakhan Oblast	30	-
Stalingrad Oblast	1,300	900
Kuibishev Oblast	2,200	800
Saratov Oblast	1,000	900
Chkalov Oblast	2,900	1,600
Crimea Oblast	1,200	300
Grozny Oblast	600	200
Ulianovsk Oblast	700	300
Penza Oblast	900	300
Riazan Oblast	1,600	300
Tula Oblast	2,800	400
Bashkir ASSR	6,100	4,700
Mordov ASSR	600	300
Tartar ASSR	2,700	1,000

The collective farms of the Astrakhan, Tambov, Penza, Saratov, Ulianovsk, Riazan and Stalingrad oblasts, those of the Stavropol territory, and the Mordov and Tartar ASSR are retarded in the work of planting perennial grasses. Of 970 state farms of the Department of State Farms of the USSR, situated in steppe-and timber-steppe regions of the European

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USSR, 763 state farms have introduced grass-field crop rotations. It is contemplated to complete the introduction of crop rotations at all state farms of this zone by 1949.

In order to ensure the development of the sowings of perennial grasses, the state farms of the Department of State Farms of the USSR have collected in the current year seeds of perennial grasses from an area twice the size of that of 1947 and have planted seeds of perennial grasses - in the amount of 53.8 thousand centners. At state farms in steppe-and timber-steppe regions seeds of perennial grasses were segregated for the 1949 harvest on an area of 195 thousand hectares. The Department of State Farms organized, in addition, 116 special seed growing households for the propagation of varietal seeds of perennial grasses.

By December 1948 the collective farms of the steppe-and timber-steppe regions of the European USSR had prepared for fall plowing 24,204 hectares, or 10,551 thousand hectares more than in the same period in 1947. Plows equipped with fore-plows prepared 6,087 thousand hectares for fall plowing. The state farms of the Department of State Farms of the USSR of this zone plowed 2,371 thousand hectares, as against 1,370 thousand hectares in the preceding year.

The fulfillment of the plan in fall plowing, according to republics, territories, oblasts, as of December 20, 1948, is indicated in the following data:

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	At collective farms		At state farms	
	Thousands of hectares	Percent of plan	Thousands of hectares	Percent of plan
Ukrainian SSR	10,478	123	653.7	122
Voronezh Oblast	1,013	84	46.9	109
Kursk Oblast	742	82	7.3	109
Crimea Oblast	88	44	30.6	89
Astrakhan Oblast	76	91	12.5	100
Kuibishev Oblast	1,010	126	116.1	98
Penza Oblast	430	72	9.0	108
Saratov Oblast	1,381	120	220.3	88
Stalingrad Oblast	1,417	118	236.1	100
Tambov Oblast	564	103	25.7	101
Orlov Oblast	276	77	11.5	101
Ulianovsk Oblast	417	104	45.8	95
Riazan Oblast	409	82	1.5	107
Chkalov Oblast	1,347	117	244.7	84
Grozny Oblast	53	59	11.1	93
Krasnodar Territory	769	70	140.0	103
Rostov Oblast	1,117	93	262.5	87
Stavropol Territory	420	49	155.5	115
Mordov ASSR	305	102	2.9	100
Tartar ASSR	668	82	27.7	74
Bashkir ASSR	954	100	122.1	84
Tula Oblast	281	70	9.6	107

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The Department of Agriculture of the USSR plans to ensure in 1949 the fall plowing and that of fallows with plows equipped with fore-plows throughout the entire area. The additional need in fore-plows has been determined with this in mind and measures have been taken to organize their production.

In order to raise the qualifications of agricultural specialists for steppe-and timber-steppe regions of the European USSR, concerning problems connected with the adoption of the field-grass system of agriculture, the Departments of Agriculture and State Farms of the USSR have begun the organization of monthly courses for senior agronomists, senior zoo-technicians and senior land administrators at the regional divisions of agriculture, as well for senior agronomists for the MTS and state farms, a total number of over 9000 people to receive this training.

In addition, the Departments of Agriculture and State Farms of the USSR have organized at the Timiriazev Agricultural Academy, the Scientific-Research Institute of Grain Economy of the South-Eastern USSR, at the Dokuchaev Scientific-Research Institute of Agriculture of the Central Black Earth zone, and at the Kharkov Agricultural Institute - permanent active monthly courses aimed at raising the qualifications of agronomists for problems involved in the grass-field system of agriculture. It is planned to train 2,025 agronomists in 1949, classes to begin on January 10, 1949.

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VI

ON THE DEVELOPMENT OF IRRIGATION AND THE CONSTRUCTION OF PONDS AND WATERSHEDS

For purposes of a wider development of irrigation, based on the utilization of waters of local runoff at collective and state farms of the steppe-and timber-steppe regions of the European USSR, the collective farms of these regions constructed 2,812 ponds and watersheds in 1948.

Distributed among the individual republics, territories and oblasts, the number of constructed ponds and watersheds at collective farms in 1948 was as follows:

Ukrainian SSR.	1,952
Voronezh Oblast.	55
Kursk Oblast	77
Krasnodar Territory.	60
Crimea Oblast.	7
Kuibishev Oblast	60
Saratov Oblast	34
Mordov ASSR.	46
Penza Oblast	32
Stalingrad Oblast.	35
Tambov Oblast.	49
Tartar ASSR	102
Ulianovsk Oblast	37
Chkalov Oblast	38

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Tula Oblast.	45
Rostov Oblast.	84
Stavropol Territory.	75
Riazan Oblast.	35

The construction of ponds and watersheds was successfully carried out by the collective and state farms of the Ukrainian SSR where in 1948 - 1,952 ponds were constructed (the plan calling for 500) and 412 ponds were rebuilt. At the present time the work of building new ponds and reconstructing the available ones continues. The collective and state farms of Voronezh oblast have built 65 new ponds and reconstructed 250 in the current year. In 1949 it is planned to construct 1000 new ponds and complete the building of 300 water reservoirs begun in 1948.

The collective farms of Rostov oblast constructed 84 new ponds in the current year, are at present in the process of building 65 ponds and have re-established 352 ponds.

The Department of Agriculture of the USSR plans to build at collective farms in 1949 - 4,300 new ponds and watersheds. Project and research work for the purpose has been concluded on 2,135 objects and exploratory work on the irrigation of lots done on an area of 140 thousand hectares. Distributed among the individual republics, territories and oblasts the volume of executed work on projects and research is demonstrated by the following figures:

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	Research and exploratory completed on:	
	Total number of objects	Including ponds and watersheds
Voronezh Oblast	425	240
Kursk Oblast	241	137
Orlov Oblast	328	125
Tambov Oblast	238	180
Riazan Oblast	12	12
Tula Oblast	20	20
Mordov ASSR	21	21
Kuibishev Oblast	27	27
Saratov Oblast	92	92
Stalingrad Oblast	8	8
Chkalov Oblast	38	38
Ulianovsk Oblast	5	--
Tartar ASSR	25	25
Penza Oblast	32	32
Krasnodar Territory	17	17
Rostov Oblast	29	29
Crimea Oblast	1	1
Ukrainian SSR	578	578

The state farms of the Department of State Farms of the USSR of this zone completed research work on irrigating an area of 8,700 hectares.

Work on the production and preparation of building material, as well as the preparation of personnel for the construction of ponds and watersheds

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is at present taking place at collective and state farms of the steppe-and timber-steppe zone.

VII

ON THE MECHANIZATION OF AGRICULTURAL WORKS, FOREST PLANTING AND THE CONSTRUCTION OF PONDS AND WATERSHEDS

In conformance with the decree of the Council of Ministers of the USSR and the CC of the VKP(b), the Departments of Agriculture and Forestry of the USSR and their local organs have determined upon the points of distribution and activity of 110 tree shelter stations. The tree shelter stations of the Department of Agriculture will serve 196 administrative regions, 9,346 collective farms with a total arable area of 12.56 million hectares on the farms.

The tree shelter stations and the agro-forest-meliorative brigades formed at state farms are distributed among the individual republics, territories and oblasts in the following manner:

	Total number of tree shelter stations	Including		Agro-forest-meliorative brigades at state farms
		Department of Agriculture	Department of Forestry	
Voronezh Oblast	5	3	2	18
Kursk Oblast	6	4	2	3
Tambov Oblast	5	3	2	6
Orlov Oblast	5	3	2	6
Krasnodar Territory	3	3	-	40
Stavropol Territory	4	3	1	38

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	Total number of tree shelter stations	Including Department of Agriculture	Including Department of Forestry	Agro-forest-meliorative brigades at state farms
Rostov Oblast	5	3	2	51
Astrakhan Oblast	3	1	2	2
Stalingrad Oblast	10	3	7	32
Saratov Oblast	7	3	4	42
Kuibishev Oblast	5	2	3	15
Chkalov Oblast	6	3	2	39
Crimea Oblast	1	1	-	12
Grozny Oblast	1	1	-	5
Ulianovsk Oblast	2	1	1	6
Riazan Oblast	3	2	1	1
Tula Oblast	2	2	-	1
Penza Oblast	4	2	2	1
Bashkir ASSR	4	3	1	16
Tartar ASSR	3	2	1	8
Mordov ASSR	2	1	1	1
Ukrainian SSR	24	9	15	157
Kazakh SSR	1	-	1	-
	110	58	52	500

The distribution of tree shelter stations of the Departments of Agriculture and Forestry of the USSR, scheduled for 1949, is presented in the attached printed map (p. 16 and 17).

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Directors for all tree shelter stations have been selected and their appointments been confirmed and their work been already started. Acting directors for the political departments have been appointed at the majority of tree shelter stations, along with senior foresters and agro-forest-meliorators and a considerable number of senior mechanics.

The Department of Forestry of the USSR has assigned 58 technical mechanics to tree shelter stations.

The local organs of the Departments of Agriculture and Forestry of the USSR are providing tree shelter stations with tractor drivers, brigade members, chauffeurs, and other mechanics.

In order to supply tree shelter stations and the specialized agro-forest-meliorative brigades at state farms with tractors, agricultural and tree planting equipment, to conform with typical machinery, the following quantities of basic machinery and equipment are provided:

Name of Machine	Total	Including		
		Dept. of Agriculture	Dept. of State Farms	Dept. of Forestry
Tractors S - 80	799	174	500	125
Tractors STZ - NATI	1,496	696	300	500
Tractors U - 2	699	174	400	125
Tractors KD - 35	640	290	200	150
Garden Tractors "TOP", complete with roof equipment	1,490	290	1,000	200
Tractor Plows - 5-gang P - 5 - 35	1,098	348	500	250
Tractor Plows - 3-gang P - 3 - 30	650	--	--	650

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Name of Machine	Total	Including		
		Dept. of Agriculture	Dept. of State Farms	Dept. of Forestry
Planting Plows	308	168	15	125
"Zig-Zag" Harrows	14,800	5,800	5,000	4,000
Tractor Cultivators KUTS - 4.2	990	290	500	200
Tractor Cultivators KUTS - 2.8	1,789	464	1,000	325
Tree-Planting Machines	2,700	1,200	400	1,100
Disk Tillers	990	290	500	200
Digging Plows LS - 2	226	116	110	--
Auto-Machines GAZ - 67	108	58	--	50
Auto-Machines GAZ - AA	216	116	--	100
Auto-Machines ZIS - 5	191	116	--	75
Auto-Tanks	274	174	--	100
Mobile Shops of Type "B"	216	116	--	100
Auto-Trailers, one wheeled, 1-1/2 ton	216	116	--	100
Auto-Trailers, two wheeled, 3-ton	108	58	--	50
Electric-Cooking outfits	108	58	--	50
Excavators	65	58	--	7
Ditch Diggers	116	116	--	--
Graders	141	116	--	25
Bulldozers	108	58	--	50
Scrapers	40	40	--	--
Motor Rollers	20	20	--	--

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U. S. S. R. Sovet Ministrov. O khode....
[On the progress of carrying out the decree....]

The above equipment will be furnished in the following periods:

Tractors S-80 to the Departments of Agriculture and Forestry - by March 1, 1949, and to the Department of State Farms by July 1, 1949;

Tractors STZ-NATI, tractors KD-35, tractors U-2, the auto-machines and auto-trailers prior to March 1, 1949;

Tractor-plows, disktillers, tractor cultivators, zig-zag harrows - prior to March 1, 1949;

800 tree planting machines prior to April 1 and 1,900 machines by September 1, 1949;

500 tractors "TOP" by April 1, and 990 tractors of the same type by August 1, 1949;

Excavators, motor rollers, graders, scrapers, and ditch digging machinery by April 1, 1949.

The Department of Agricultural Machine Construction of the USSR will deliver in 1949 to tree shelter stations the following special type machines:

	Total	Including					
		To Dept. of Agriculture		Dept. of Forestry		Dept. of State Farms	
		By July 1	Sept. 1	July 1	Sept. 1	July 1	Sept. 1
Forest Cultivators	4,350	600	1,200	500	1,000	300	750
Horse Tree Seeders	1,200	200	400	100	250	80	170
Tractor Plows with Soil Diggers	1,660	660	--	500	--	500	--

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[On the progress of carrying out the decree....]

The Department of Agriculture has forwarded to tree shelter stations 988 tractors, 50 auto-machines (automobiles), 40 mobile shops, 50 auto-tanks, 114 tractor plows, 145 tillers, 255 cultivators, and 2,500 links of "zig-zag" harrows. Oil-tara, tools and other equipment for repair shops at tree shelter stations are being forwarded all along.

Living and production quarters have been provided at the majority of tree shelter stations.

Projects for standard agreements between tree shelter stations and collective farms for conducting the work on tree shelter growth, statutes on the wages of tractor drivers, brigade members, machinists for tree planting machines, as well as suggestions concerning the manner in which premiums should be issued to workers at tree shelter stations - have been worked out at the present time.

VIII

ON THE ESTABLISHMENT OF A MAIN ADMINISTRATION OF TREE SHELTER GROWTH, ATTACHED TO THE COUNCIL OF MINISTERS OF THE USSR

In conformance with the decree of the Council of Ministers of the USSR and the CC of the VKP(b), dated October, 1948, a Main Administration of Tree Shelter Growth, attached to the Council of Ministers of the USSR, has been established. It is composed of leading personnel and specialists in agro-forest-meliorative work, forestry, and mechanization.

The Regulation (Statute) concerning the Main Administration of Tree Shelter Growth, attached to the Council of Ministers of the USSR, has been approved.

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U. S. S. R. Sovet Ministrov. O khode....
[On the progress of carrying out the decree....]

The Main Administration of Tree Shelter Growth is to guide and control the execution of the decree of the Council of Ministers of the USSR and the CC of the VKP(b), of October 20, 1948, as performed by the respective departments and divisions.

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Included are:

A map (p. 16-17) on the distribution of tree shelterbelt stations scheduled for 1949, of the Departments of Agriculture and Forestry of the USSR;

A map (inserted) of tree shelterbelts of the Novo-Annenski district of Stalingrad oblast.

End of pamphlet.

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U.S.S.R. Sektor Vneshnego i Vnutrennogo Karantina Rastenii. List of pests and diseases subject to foreign plant quarantine established for the USSR. U.S.S.R. Sekt. Vnesh. i Vnutren. Kar.Rast.(Pub.)2, 46 p. 1935. 464.9 Un3

Transl. 25: Plant Protection

Translated in part by: S. N. Monson.

Translated in part (Introduction,p.3-5, names, and synonyms of each item) (Transl.25: Plant Protection).

25

INTRODUCTION (p. 3 - 5)

The Sector of Foreign and Domestic Quarantine of NKZ of USSR publishes a list of pests and diseases of plants subject to Foreign Quarantine, established for the Soviet Union and approved by the NKZ of USSR, following the Decree of the Council of Peoples' Commissars of the Soviet Union, No. 2598, dated November 20, 1934, concerning "The Protection of the Territory of the Soviet Union from the penetration and Spread of Agricultural and Forest Pests".

Under the heading "Status on Foreign Plant Quarantine", it lists 135 species of the most important pests and diseases of agricultural plants that are subject to quarantine measures.

All species of quarantined pests and diseases included in the list are divided into three groups which correspond to gradings established for freight imported into the Soviet Union and subject to control.

The first group consists of the most injurious species of pests and diseases of agricultural crops altogether absent from the USSR.

To forestall the importation of quarantine objects of this group into the Soviet Union an embargo was established on crops which may serve as sources of infection. The embargo is either complete, as in the case of potatoes and other root crops, or root crops which do not arrive from countries of their origin, but from certain localities where individual species of pests and diseases of the above group prevail, such as seed stock of citrus plants from countries where there is canker infestation of citrus plants, etc.

An exception is made only for scientific-research purposes, in which case

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a permit is issued by the Quarantine Sector of NKZ of USSR for every individual case, determining the type of the quarantine.

The second group consists of pests and diseases absent from the USSR, as well as of some particularly harmful species that had formerly penetrated into separate parts of the Union; quarantine measures in these instances are directed towards eliminating foci of infection.

Quarantine objects of the second group call for an embargo on the entire shipment of imported freight, whenever quarantine inspection discovers one species of pests and diseases, in the event that the application of existing measures of segregation and disinfection does not ensure complete safety from infestation.

In the latter case, the infested parts of a shipment are returned to the expediter or destroyed. The third group includes pests and diseases both absent and present in USSR and therefore representing objects of domestic quarantine.

Quarantine measures relating to objects of the third group consist in the disinfestation of freights, the determination of points of destination and the introduction of special measures to be applied to seed and planting stock, i.e. the passage through quarantine nurseries, hothouses and plots, the keeping of plants under "provocative" conditions which contribute to the appearance of hidden stages of infestation, and in some instances in the application of aseptic methods of propagating plants "under control" in isolated places.

When infestation by pests and diseases is discovered among imported vegetative material absent in USSR but not appearing in the above list, the importation of this material into the Union may only be permitted under terms applicable to the second group of quarantined objects.

All institutions, organizations and individuals are required to obtain a

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permit from the Sector of Foreign and Domestic Quarantine of NKZ of USSR prior to ordering or purchasing living plants or seeds and planting stock from abroad, in conformance with point 4 of the Decree of the Council of Peoples' Commissars of USSR, No. 2598, of November 20, 1934. All freights and mail packages arriving in the Soviet Union which contain living plants, seeds or planting stock, cotton fiber, and other quarantined material from countries having government quarantine or plant protection services, should be provided with official certificates issued at their respective points of departure. These certificates must state that the specific freight is: a) either completely free from infestation by quarantined objects included in quarantine permits, b) or that the organization which issues the certificate does not guarantee the absence of infestation by these pests and diseases.

The list represents the work of specialists of the Government Quarantine Service, compiled under the editorship of comrades A. L. Efimov and N. S. Shcherbinovskii, senior specialists.

SECTOR OF FOREIGN AND DOMESTIC QUARANTINE AT NARKOM

OF AGRICULTURE OF USSR.

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FIRST GROUP

A. ENTOMOLOGICAL OBJECTS

1. Colorado Potato Beetle, Leptinotarsa decemlineata Say

Synonyms: Doryphora decemlineata Say; Chrysomela decemlineata Say.

2. Potato Moth, Phthobrimaea operculella Zell.

Synonyms: Gelechia terella Walx; Gelechia operculella Zell,; Lita solanella Wegr.; Gelechia tabacella Kag.; Lita tabacella; Gelechia solanella Wegr.

3. "Pink scale"; cottony cushion scale, Pectinophora gossypiella Saund;

Synonyms; Platyedra gossypiella Saund; Gelechia gossypiella Saund; Icerya purchasi Mask.

4. Australian pink scale, Platyedra Scutigera Hold.

B. BACTERIAL DISEASES

5. Inducer - Bacterium citri (Hasse) Doidge

Name of disease: citrus canker.

Synonyms: Pseudomonas citri Hasse; Rhytomonas citri (Hasse) Borgey; Bacterium citri (Hasse) Jehle.

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C. FUNGI DISEASES

6. Inducer: Synchytrium endobioticum (Schib) Perc.

Name of disease: canker of potato tubers.

7. Inducer: Phlyctaena linicola Speg.; syn. Septoria linicola.

Name of disease: "Pasmo" of flax.

SECOND GROUP

A. ENTOMOLOGICAL OBJECTS

1. STRAWBERRY NEMATODE, Aphelenchoides fragariae Ritz Boz.

Syn. Aphelenchoides ormerodis Ritz-Boz.

2. CITRI NEMATODE Tylenchulus semipenetrans Cobb

3. POTATO NAMATODE, Heterodera rostochiensis Wolln.

4. GALL OR ROOT NAMATODE, Heterodera radicicola Greet;

syn. Heteroddra marioni Cornu.

5. COTTON GALL MITE, Eryophyes gossypii Bank.

6. Orange thrips, Scirthothrips citri.

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7. Aurantiaceae red scale, Aonidiella aurantii Mask.

Syn. Aspidiotus aurantii Mask.; Asp. citri Comst.; Chrysomphalus aurantii Mask. Asp. coccineus Jennadius; Aonidiella taxus Leonardi.

8. "Tutovaia shchitovka" (scale) Pseudaulacaspis pentagona Targ.

Syn. Diaspis pentagona Targ.-Tozzeti; Diaspis amygdali Tryon; Diaspis lanatus Morg.; Chionaspis prunicola; Diaspis patelliformis Sass; Diaspis auranticolor; Diaspis amygdali var. rubra Mask.; Howardia prunicola Kirkoldy; Sasaiaspis pentagona Targ.

9. Prontaspis citri Comst.

Syn. Chionaspis evonymi Comst.; Chionaspis citri Comst.; Howardia citri Berlese.

10. Prontaspis Yanonensis Kuw.

Syn. Chionaspis yanonensis Kuw.

11. Citricola mealy bug scale, Pseudococcus gahani Green.

Syn. Pseudococcus citrophilus Clause.

12. Pseudococcus comstocki Kuw.

13. Black bamboo scale, Antonina bambusae Mask.

Syn. Sphaerococcus bambusae Maskell; Chaetococcus bambusae Maskell; Ant. bambusae (Mask) Dupont.

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14. Asterolecanium Bambusae Boisd.

Syn. Planchonia bambusae De Charm.;Ast. bambusae Boisd. Newstead;Ast. bambusae Boisd. Green; Ast. bambusae Boisd. Bodenheimer.

15. Pulvinaria innumerabilis Rathi.

16. Black scale, Saissetia nigra Nieth.

Syn. Lec. nigrum Nieth.; Lec. depressum Targ.; Lec. begoniae Dougls.; Lec. (Saissetia) nigrum var. begoniae Ckll and Parr.; Saissetia depressa Targ.; Lec. nigrum Newstead; Saissetia nigra Steaw.

17. Fig-waxy scale, Ceroplastes rusci Linn.

Syn: Coccus rusci L.; Coccus caricae Bernard; Coccus artemisiae Rossi; Calypticus radiatus Costa; Cal. testudineus Costa; Cal. hydaris Costa; Columnea testudinata Targioni-Tozz.; Columnea testudiniformis Targioni-Tozzetti; Chermes caricae Bois.; Ceroplastes risci Signoret; Cer. rusci L. Leonardi.

18. Trionymus diminutus Leon.

Syn: Dactylopius calceolariae; Pseudococcus diminutus Leon.

19. Egyptian ribbed scale, Icerya aegyptiacum Dougl.

20. Common batata weevil, Cylas formicarius Fabr.

21. African batata weevil, Cylas compressus Hart.

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21. African batata weevil, Cylas compressus Hart.

22. Japanese batata weevil, Scepticus insularis Roel.

23. Tropical batata weevil, Fuscepes batatae Waterh.

Syn. Cryptorrhynchus batatae Waterh.

24. Reddish-legged batata weevil, Cylas femoralis Faust.

25. Elegant batata weevil, Cylas elegantulus Summ.

26. Potato weevil, Premnotrypes solani Pierce

27. Potato weevil, Trypopremnon latithorax Pierce.

28. Potato weevil, Trypopremnon sanfordii n. sp.

29. Potato weevil, Phigopsidius Tucumanus Heller.

30. Batata weevil, Elytroteinus subtruncatus F.

31. Anthonomus vestitus Boh.

32. Mexican cotton weevil, Anthonomus grandis Boh.

33. Arizona weevil, Anthonomus grandis thurberiae Bis.

34. Japanese beetle, Popilia japonica New.

35. Eastern melon fly, Bactrodera cucurbitae Cock.

36. Melon fly, Myiopardalis pardalina Big.

37. Olive Fly, Dacus oleae Gmel.

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38. Mediterranean fruit fly, Ceratitis capitata Wied.

39. Black fig fly, Lonchaea aristella Beck.

40. Apple Fly, Rhagoletis pomonella Walsk.

41. Solanum fly, Zonosemata electa Say.

42. Eastern codling moth, Laspeyresia molesta Bus.

Syn: Cydia molesta; Grapholitha molesta.

43. Japanese pear moth (borer), Numonia pyrivorella Mats.

Syn: Kephopteryx rufizonella Mats.

44. Citrus moth, Prays citri Mill.

B. BACTERIAL DISEASES

45. Inducer: Bacterium citriputeale Smith.

Syn: Bact. citrarefaciens; Phytomonas citriputeale (Smith) Bergey.

Disease: Citrus blast.; black pit; mal secco.

46. Inducer, Aplanobacter michiganenses Erw. F. Smith; Bac. michiganense.

E. F. Smith; Pseudomonas michiganense (E.F.Smith) Stevens;

Phytomonas michiganense (E.F.Smith) Bergey.

Disease: Bacterial tomato canker; Bacterial canker.

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47. Inducer: Bacterium flaccumfaciens Hedges;

Syn: Phytomonas flaccumfaciens (Hedges)Bergey; Pseudomonas flaccumfaciens (Hedges) Stapp.

48. Inducer: Bacterium medicaginis var. phaseolicola (Burkholder) Link. et Hall.

Syn: Phytomonas medicaginis var. phaseolicola Burkholder; Bacterium puerariae (Hedges); Phytomonas puerariae (Hedges) Bergey.

Disease: Halo blight.

49. Inducer: Bacillus amylovorus (Burril) Trevisan

Disease: Burn, necrosis, fire-blight; canker.

Syn: Micrococcus amylovorus Bur.; Bact. amylovorus (Burril) Chester; Bact. amylovorum (bur.) Serbinoff; Bac. amylovorus (Burril) de Toni; Erwinia amylovora (Bur.) Com. S.A.B.

50. Inducer: Bacterium translucens Jones; Johnson, Reddy; Bact. atrofaciens McCulloch.

Syn: Bact. translucens; Pseudomonas translucens, var. undulosa (Smith, Jones, Reddy) Stapp.

Bact. atrofaciens: Phytomonas atrofaciens (McCulloch) Bergey; Pseudomonas atrofaciens (McCulloch) Stapp.

Disease: Black chaff.

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51. Inducer: Bacterium mori Boyer et Lambert. emend. E. F. Smith.

Synonyms: Pseudomonas mori (Boyer et Lambert) Stevens; Phytomonas mori (Boyer et Lambert) Bergey.

Disease: Burn of mulberry tree (Morus)

C. FUNGI DISEASES

52. Inducer: Sclerotium Rolfsii Sacc.

Superior stage: Corticium centrifugum, syn: Hypochnus centrifugus (Lev) T.

Disease: Sclerotial rot.

53. Inducer: Phoma lingam (Tode) Desm.

Synonym: Sclerotium sphaeriaeforme Lib., Phoma oleracea Sacc. Sphaeria Lingam Tode.

Disease: Dry rot, black leg; drop disease; American root rot; Phoma wilt.

54. Inducer: Spongospora subterranea (Wallr) John

Synonym: Frysibe subterranea Wallroth; Tubercinia Scabies Berkeley; Sorosporium scabies; Protomyces tubersolani; Rhizosporium solani, Spongospora solani, Sp. scabies.

Disease: Powdery scab.

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55. Inducer: Sporotrichum citri E. Y. Butler

Synonym: Gloeosporium citri Mass; Cladosporium citri Mass.; Sporotrichum citri (Butl:); Cladosporium fulvum Ckl, Sphaceloma Faucettii Jenk.

Disease: Citrus scab, lemon scab; verrucosis.

56. Inducer: Plowrightia morbosa (Schw.) Sacc

Synonym: Dibotryon morbosum (Schw.) T., Hendersonula morbosa Sacc., Sphaeria morbosa Schw.

Disease: Black knot, plum wart.

57. Inducer: Endothia parasitica (Murr.) L. U. and H. W. Ander.

Synonym: Diaportae parasitica Murr.

Disease: Chestnut canker.

58. Inducer: Phymatotrichum omnivorum Schear; Dug

Synonym: Ozonium omnivorum Schear.

Disease: Texas root rot.

59. Inducer: Ceratostomella fimbriata (Eeth.) Ell.

Synonym: Ceratocystis fimbriatum E. et H.; Ceratocystis batatae Wil: Sphaeronema fimbriate (E. et H.) Sacc.

Disease: Black rot.

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60. Inducer: Macrophoma edulis Alm.

Disease: Java black rot.

61. Inducer: Diplodia tubericola (E. et Ev.) Taub.

Synonym: Lasiodiplodia tubericola E. et. Ev., Botryodiplodia tubericola (E. et. Ev.) Petr.

Disease: Java black rot.

62. Inducer: Fusarium batatis Wr.

Disease: Stem rot, "die off", wilt, blue stem, yellow blight.

63. Inducer: Fusarium hyperoxisporum Wr.

Disease: Stem rot, wilt, blue stem, yellow blight.

64. Inducer: Tilletia pancicii, Bubak et Ranojevic.

Disease: Wet smut of barley.

65. Inducer: Tilletia horrida Tak.

Disease: Smut of rice.

66., Inducer: Urocystis tritici Koern.

Disease: Stem smut of wheat.

67. Inducer: Uromyces betae Lev.

Disease: Ruse of sugar beet.

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THIRD GROUP

A. ENTOMOLOGICAL OBJECTS

1. Strawberry mite, Tarsonemus fragariae H. Zimm.

2. Gladeolus thrips, Taeniothrips gladioli M. and S.

3. Wooly apple aphid, Eriosoma lanigerum Hausm.

4. Phylloxera, Phylloxera vastratrix Planch.

5. Citrus "white fly", Dialeurodes citry Ashm.

6. Japanese camphor scale, Pseudaonidia theae Mask.

   Synonym: Aspidiotus theae Mask; Aspidiotus (Evaspidiotus) theae Mask. Asp. duplex Plank; Aspidiotus theae var. rhododendroni, Green

7. San José scale (California), Comstockaspis perniciosus Comst.

   Synonym: Aspidiotus perniciosus Comst,; Aonidia fusca Mask. Aonidiella perniciosa Berl.

8. Pulvinaria psidii Mask.

   Synonym: Pulvinaria psidii philippina Cockerell; Pul. psidii Mask. Newstead; Pulvinaria psidii Mask. Br.; Pulv. psidii Mask. Takahashii.

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9. Olive scale (worm), Saissetia oleae Bern.

Synonym: Chermes oleae Bernard; coccus oleae oliv; Coccus palmae Oliv; Coccus testudo Curtis; Chermes cycadis Boisd.; Lec. cassinae Mask.; Bernardia oleae Ckll.; oleae var testudo Cockerell; Lec. mirandum Ckll. Parr.; Sais. oleae Bern. Leonardi; Saissetia oleae Bern Steinweden; Sais. oleae Bern Quayle.

10. Rod-shaped scale, Lepidosaphes gloveri Pack.

Synonym: Coccus gloveri Pack.; Aspidiotus gloveri Pack.; Mytilaspis gloveri Comst.

11. Pomegranate comma-shaped scale, Lepidosphes beckii Newm.

Synonym: Coccus beckii Newman; Aspidiotus citricola Pack.; Coccus anguineus Boisd, Mytilaspis flavescens Targ-Tozzetti; Lepidosaphes pinnaeformis Bouché.

12. Black scale, Parlatoria zizyphi Lucas.

Synonym: Coccus zizyphi Lucas; Chermes aurantii Boisd. Parlatoria Lucasii Targioni-Tozzetti.

13. Destructive scale, Aspidiotus destructor Sign.

14. Round orange scale, Chrysomphalus aonidum Linn.

Synonym: Coccus aonidum Linn.: Aspidiotus ficus Comst.

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15. Grape mealybug scale, Pseudococcus maritimus (Ehrb.); Pseudococcus citri Risso.

Synonym: Dorthesia citri Risso; Coccus vitis Risso; Dactylopius ficus Sign.; Dactylopius ceratoniae Sign.; Dactylopius indicus Sign.; Dactylopius lavandulae Sign.

16. Cottony scale, Pulvinaria aurantii Ckll.

Synonym: Pulvinaria aurantii Cockerell Bull; Takahashia citricola Kuw.

17. Chinese citrus waxy scale, Ceroplastes sinensis Del. Guer.

Synonym: Ceroplastes sinensis Del. Guer. Leonardi.

18. Australian ribbed scale, Icerya purchasi Mask.

19. Wide-snout (proboscis) storage weevil, Caulophylus latinasus Say.

20. Fruit bark-eater, Coccotrypes dactyliperda F.

21. Cofee bark-eater, Stephanoderes hampei Fern.

22. Japanese opal cockchafer, Aserica japonica Motsch.
Syn: Aserica castanea Arr.; Autoserica castanea Arr.

23. Carrot beetle, Ligurus gibbosus De Geer.

24. Siamese "flat-body", Lophocaterus pusillus Klug.

25. Potato ladybird, Epilachna nipponica Lewis.

26. 28-Spotted ladybird, Epilachna 28-punctata Fal.

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27. Peanut weevil, Pachymerus pallidus Oliv.

Synonym: Caryoborus pallidus Ol.; Spermophagus pallidus Ol.

28. Bruchus analis F.

29. Callosobruchus Gossypii Chevr.

30. Vavilov weevil, Bruchus ulicis Vavilovi Baeckmann

31. Spermophagus hofmanseggi Gyll.

32. Brasilian bean (pea) weevil, Zobrotes subfasciatus Boh.

Synonym: Spermophagus pectoralis Say.

33. Spermophagus piurne Pierce.

34. Chinese weevil, Callosobruchus chinensis L.

Synonym: Pachymerus chinensis L.; Bruchus chinensis L. Bruchidius chinensis L.; Bruchus scutellaris F; Br. pectinicornis L.

35. Callosobruchus phaseoli Gyll.

Synonym: Pachymerus phaseoli Gyll; Bruchus phaseoli Gyll.

36. Callosobruchus guadrimaculatus F. (4-spotted weevil)

Synonym: Bruchus guadrimaculatus F.

37. Bruchidius aurivillii Blanc.

38. Bruchidius alfieri Pic.

39. Bruchidius trifolii Mot.

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40. Bruchus ornatus Boh.

Synonym: Pachymerus ornatus Boh.

41. Bruchidius incarnatus Boh.

Synonym: Bruchus incarnatus Schm.

42. Acanthoscelides mimosae F.

Synonym: Bruchus mimosae F.

43. Bean weevil, Acanthoscelides obsoletus Say.

Synonym: Bruchus obtectus Say.; Bruchus obsoletus Say.; Bruchus irroseotus Fahr.; Bruchus pallidipes Fahr.; Bruchus broweri Grotch.; Bruchus subellipticus Woll.; Bruchus fabae Fitch.; Laria irresecta Fahr.; Laria obtecta Say.; Mylabris irresecta Fahr.; Mylabris obtectus Say.; Bruchidius (Acanthoscelides) obtectus Say.

44. Trogoderma granarium Everts.

Synonym: Trogoderma khapra Arrow.

45. Peanut skin-eater, Trogoderma tricolor Arrow.

46. Australian "make-believer", Ptinus tectus Boisdv.

47. Batocera Lineolata Chavr.

48. Calandra sasakii Takahashi.

49. Corn weevil, Calandra Zea mais Motsch.

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50. Sorghum gall Contarinia sorhicola Sog.

51. Rice (drugstore) beetle, (grass moth), Stegobium paniceum L.: Chilo simplex Butl.

Synonym: Schoenobius simplex Butl.

52. Olive moth, Prays oleellus Fabr.

Synonym: Atemelia oecophora oleella Fabr.

53. Soya moth, Eucosmia glycinivorella Mats.

54. Ballworm, Earias insulana B.

B. BACTERIAL DISEASES

55. Inducer: Bacterium tumefaciens Smith et Townsend.

Synonym: Pseudomonas tumefaciens (Smith et Townsend) Stevens; Phytomonas tumefaciens (Smith et Townsend) Bergey; Polymonoos tumefaciens (Smith et Townsend) Lieske.

Disease: Root canker of fruit trees.

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C. FUNGI DISEASES

56. Inducer: Fusarium conglutinans Woll.

Disease: cabbage yellows.

57. Inducer: Ustilago Reiliana Kuhn.

Synonym: Sorosporium Reilianum K.; Sphacelotheca Reiliana (Kuhn) Clint.; Cintractia Reiliana (Kuhn) Clint.

Disease: Loose smut of corn and sorghum.

58. Inducer: Urocystis cepulae Frost

Synonym: Urocystis Colchici, Caeoma Colchici Schl.; Uredo Colchici Link.; Erysibe arillata W.; Sporisorium Colchisi Lib.; Polycystis pompholygodes Lev.; Polycystis colchici, Straus; Urocystis magica, Pass; Urocystis hypogta Korn; Urocystis cepulae Fr.; Urocystis Colchisi, var cepulae Cooke.

Disease: Smut of onion.

End of Pamphlet.

A.M.F.
August 14, 1951.

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U.S.S.R. Sektor Vneshnego i Vnutrennego Karantina Rastenii.
Perechn' vreditelei, bolezney i sorniakov s.-kh. rastenii - ob'edtov vneshnego karantina, ustanovlennyi di is SSSR na 1940 god (A list of pests and diseases and weeds of agricultural plants - objects of external quarantine established for U.S.S.R. for the year 1940). Moskva, 1940. 62 p. 632.48 Un34P.

Translated in part from the Russian by S. N. Monson.

[Title, synonyms, crops affected, and quarantine measures translated for each item]

26

PESTS AND DISEASES OF COTTON

PINK BALL WORM, COTTON MOTH Pectinophora gossypiella Saund.

Synonym: Gelechia gossypiella Saund. Platyedra gossypiella Saund., Depressaria gosspyiella Saund.

Crops affected: All species of cultivated and uncultivated cotton; gambo hemp; okra, and other plants of the mallow family.

Quarantine measures:
1) Prohibition to import cotton seeds and raw cotton;
2) Prohibition to import cotton fiber from countries and regions infested by the pink worm;
3) Disinfection of cotton fiber permitted for entry from regions non-infested by the pink worm, and regulations for it's processing, but prohibition of it's importation into cotton-growing regions;
4) Removal of specimens of cotton seeds, raw cotton, and cotton fiber from parcels;
5) Removal of articles having stuffings made from cotton seeds, raw cotton or cotton fiber;
6) Disinfestation of bales of wool, whenever cotton seeds, cotton balls, raw cotton and cotton fiber with seeds cling to them.

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MALLOW GRAPE BERRY MOTH, Polychrosis viteana (Clem);
Crocidosema plebeiana Zell.

Synonym: Eucosma plebejana Walls.

Affected crops: Cotton; hemp, Althaea rosea, Malvastrum spicatum; Malvaviscus drummondii.

Quarantine measures: Same as against pink worm (Pectinophora gossypiella Saund.)

COTTON BOLL WORM Earias insulana Boisd.

Affected crops: Cotton and other plants of the Malvaceae family.

Quarantine measures: Same.

Oecophora inopisema Butl.

Affected crops: Cotton.

Quarantine measures: Same.

MEXICAN COTTON WEEVIL, Anthonomus Grandis Boh.

Affected crops: Cotton.

Quarantine measures: Same.

ARIZONA WEEVIL, Anth. Grandis Boh. var. Thurberiae Pierce.

Affected crops: Cotton, both cultivated and uncultivated Thurberia.

Quarantine measures: Same.

ANTHONOMUS VESTITUS BOH.

Affected crops: Cotton.

Quarantine measures: Same.

WHITE RIBBED BEETLE, Pantomorus Leucoloma Boh.

Synonyms: Pantomorus (Graphognatus) leucoloma Boh.

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Affected crops: Cotton; corn; batata; sugar cane, and many fruit and ornamental plants.

Quarantine measures: Same. With regard to other crops - prohibition to import root crops from infested regions of North America (USA) and Australia (New South Wales); fumigation of planting stock and destruction of tare and wrappings of freights in quarantine; quarantine supervision at ports, river, railroad, and air communication points, as indicated in Instructions. (Section 6, pp.8,16,31), confirmed November 23, 1937.

SPERMOPHAGUS HOFMANSEGGI GYLL.

Synonym: Spermophagus robiniae Ol.

Affected Crops: Cotton

Quarantine Measures: Same as above.

SPERMOPHAGUS PIURNAE PIERCE

Affected crops: Cotton.

Quarantine measures: Same.

COTTON GALL MITE, Eriophyes Gossypii Bank

Affected crops: Cotton and other plants of the Mallow family.

Quarantine measures: Same as against pink worm.

ANTHRACNOSES OF COTTON

Affected crops: Cotton; upper parts of plants and seeds.

Quarantine measures: Same.

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PESTS AND DISEASES OF POTATOES: COLORADO POTATO BEETLE

Leptinotarsa decemlineata Say.

Synonym: Doryphora decemlineata Rogers, Chrysomela decemlineata Say.; Polygramma (Chew) decemlineata Motsh.; Myccorina (Stal.) decemlineata.

Affected crops: Potatoes, tomatoes; tobacco; eggplants, solanacea, thornapple; henbane, and other species of Solanaceae.

Quarantine measures: Embargo upon potato tubers, as well as measures indicated in Instructions on quarantine examination at ports, water, railroad, and air communication points (Instructions, pp. 8,16,31), confirmed Nov. 23, 1937.

28-Spotted LADYBIRD, Epilachna 28-Punctata F.

Affected crops: Potatoes; eggplants, tobacco, okra; phaseolus; hemp; "momordika".

Quarantine measures: Same as against the Colorado beetle.

POTATO LADYBIRD, Epilachna 28-maculata Motsch.

Affected crops: Potatoes; tomatoes; eggplants and other Solanaceae; soya beans.

Quarantine measures: Same as against the Colorado beetle.

POTATO MOTH, Phthorimaea Operculella Zell.

Synonym: Gelechia terella Walk.; Gelechia operculella Zell.; Gelechia tabacella Rag., Gelechia solanella Meyr., Bryotropha solanella Bds., Lita solanella Meyr., Lita tabacella, Gnorimoschema operculella Zell.

Affected crops: Potatoes, eggplants, tomatoes, peppers, tobacco; henbane and other Solanaceae.

Quarantine measures: Same.

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STEM SOLANUM MOTH, Gnorimoschema Plasiosema Turn.

Synonym: Phthorimaea melanoplintha Mayr., Ph. plasiosema Turn., Gnorimoschema tuberosella Busck., Gn. melanoplintha Meyr.

Affected crops: Potatoes, tomatoes; black solanum.

Quarantine measures: Same.

SOUTH AFRICAN POTATO MOTH, Euzophera Villosa Fuld.

Affected crops: Potatoes.

Quarantine measures: Same.

MEDITERRANEAN POTATO MOTH, Eusophera Osseatella Fr.

Affected crops: Potatoes, eggplants.

Quarantine measures: Same.

POTATO NEMATODES, Heterodera Rostochiensis Woll.

Synonym: Heterodera schachtii f. solani Zimm.

Affected crops: Potatoes, tomatoes, henbane; black Solanum.

Quarantine measures: Same.

POTATO CANKER, Synchytrium endobioticum Pers.

Synonym: Chrysophlyctis endobiotica Schilb.

Affected crops: Potatoes.

Quarantine measures: Embargo on potato tubers; transplanting of potatoes imported under special permits to quarantine greenhouses or quarantine plots, provided they do not prove infested with canker. Infested tubers are destroyed. Transplanting of other root crops, to quarantine plots, and tubers originating from countries infested by potato canker, after cleansing and treating the soil.

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POWDERY SCAB OF POTATO

Synonym: Spongospora solani Br.

Quarantine measures: Same as against potato canker.

PESTS AND DISEASES OF CITRUS CROPS.

MEDITERRANEAN FRUIT FLY, Ceratitis Capitata Wied.

Synonym: Trypeta capitata Wied., T. punctata Wied., Petelophora capitata Macquart., Ceratitis citriperda MacLeay., C. hispanica Rondani.

Affected crops: Oranges, grapefruit, lemons, tangerines; bananas, avocado; figs, cacti; guava; pomegranates; apricots; apples, plums; cherries (chereshnia); grapes; dates; horse beans; phaseolus, tomatoes; eggplants; peppers; altogether up to 72 plants.

Quarantine measures: Embargo on infested shipment of plants; regulations for points of entry and areas where shipments of fruits are used.

WEST-INDIAN FRUIT FLY, Anastrepha Fraterculus Wied.

Synonym: Anastrepha acidusa Walk.

Affected crops: Citrus fruits; peaches, pears, grapes, mangoes, coffee, persimmons.

Quarantine measures: Same as against the Mediterranean fruit fly.

MEXICAN FRUIT FLY, Anastrepha Ludens, LW.

Affected crops: Citrus fruits, mangoes, apricots; plums.

Quarantine measures: Same as in the case of the Mediterranean fruit fly.

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CITRUS MOTH, Prays Citri Bill.

Synonym: Prays nephelamima Meyrook., Acrolepia citri Mill et Ragonot.

Affected crops: Citrus.

Quarantine measures: Embargo on infested plant shipments.

CITRUS MEALYBUG (SCALE) Pseudococcus Gahani Green.

Synonym: Pseudococcus citrophilus Clausen.

Affected crops: Citrus; peaches, apricots; currants; gooseberries, persimmons; guavas, palms, grapes, eucalyptus, pronged trees; magnolia, potato tubers.

Quarantine measures: Embargo on infested plant shipments and regulations for points of entry and areas where fruit shipments are used.

MEALYBUG SCALE COMSTOCK, Pseudococcus Comstocki KUW.

Affected crops: Citrus and seed fruits; mulberry trees; catalpa; pine trees; maple trees; grape vines; persimmons; soya beans; water-melons; bananas; altogether up to 50 species of plants.

Quarantine measures: Embargo on infested plant shipments.

AUSTRALIAN RIBBED SCALE, Icerya Purchasi Mask.

Affected crops: Lemons; tangerines; oranges; grapefruit; pomegranates; tea shrubs; olives, acacia; laurel; Gleditchia L.; roses; ivy; cypress; willow; chestnut; banana; blackberry; barberry; eucalyptus; magnolia; grape; palms; cabbage; hemp; pepper; camphor tree; chickory; fig; buckwheat; solanus; potatoes.

Quarantine measures: Disinfestation of infested shipment and regulations at points of entry.

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EGYPTIAN RIBBED SCALE, Icerya Aegyptiaca Dougl.

Synonym: Crossotosoma aegyptiaca Dougl.

Affected crops: Citrus and fruit trees; palms; breadfruit tree; guava; ficus.

Quarantine measures: Disinfestation of infested plant shipments and transplanting to quarantine greenhouses.

COTTONY SCALE, Pulvinaria Aurantii Ckll.

Synonym: Taka hashia citricola Kuw.

Affected crops: Citrus, stone fruits; tea shrub; coffee tree, cinchona; Japanese persimmons; pistacchio; mulberry tree; guave; mango; figs; ferns.

Quarantine measures: Disinfestation of infested plant shipments.

CHINESE CITRUS WAXY SCALE, Ceroplastes Del. Cuor.

Synonym: Ceroplastes citripediformis Comst.

Affected crops: Citrus; promegranates; cornel tree (dogwood); persimmon; chereshnia, (cherry); pear; peach; magnolia; laurel; walnuts.

Quarantine measures: Disinfestation of infested plant shipments and regulations at points of entry.

BLACK SCALE, Saissetia Nigra Nieth.

Synonym: Lecanium nigrum Nieth., L. depressum Targ. Tozz., L. begoniae Dougl., Saissetia nigra v. begonia Ckll., S. depressa Targ.

Affected crops: citrus, grape, mulberry, banana, fig, magnolia, coffee trees, cinchona, begonia, gamboo, cotton, asparagus, agave, croton, abutilon.

Quarantine measures: Disinfestation of infested plant shipments.

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ROD-SHAPED JAPANESE SCALE, Leucaspis Japonica Ckll.

Affected crops: Citrus, lilac, pear, apple, camelia, maple, rose, peony, magnolia, sycamore.

Quarantine measures: Disinfestation of infested plant shipments.

ROD-SHAPED SCALE, Lepidosaphes Gloveri Pack.

Synonym: Coccus gloveri Pack., Mytilaspis flava Targ., M. pallida Green., M. gloveri Comst., Lepidosaphes flave Kirk., L. gloveri Lind., Aspidiotus gloveri Pack.

Affected crops: Citrus, olive, grape, magnolia, palm.

Quarantine measures: Same.

POMEGRANATE COMMA-SHAPED SCALE, Lepidosaphes Beckii Newm.

Synonym: Mytilaspis pinnaeformis Bouche, Mytilaspis flave Targ., M. flavescens Targ., M. citricola Comst. M. citricola v. tasmaniae Mask., M. tasmaniae Ckll., Cossuc beckii Newm. C. anguineus Boisd., Aspidiotus citricola Pack., Lepidosaphes pinnaeformis Fern., L. beckii oleae Leon.

Affected crops: Citrus, fig, olive, pronged tree, pistacchio, grape, Russian olive /Elaeagnus augustifolia/ orchidae, palms.

Quarantine measures: Same.

PRONTASPIS YANONENSIS Kuw.

Synonym: Chionaspis yanonensis Kuw.

Affected crops: Citrus.

Quarantine measures: Disinfestation of infested plant shipments and transplanting to quarantine nurseries and greenhouses.

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ROUND ORANGE SCALE, Chrysomphalus Aonidum Linn.

Synonym: Coccus aonidum Linn., Chrysomphalus ficus Aschm., C. aonidum Ferm. C. ficus Berl., Aspidiotus ficus Comst. Asp. ficus Berl., Asp. aonidum Hamp., Asp. ficus Riley.

Affected crops: Citrus and spindle trees, laurel, acacia, breadfruit and pronged trees, camphor and palm trees, Japanese persimmons, Japanese medlar, eucalyptus, figs, laurels, cacti, cork oak, plums, pomegranates, grape vines, roses, castor plants.

Quarantine measures: Disinfestation of infested shipment and regulations at points of entry and areas where citrus fruits are used.

BROWN SCALE, Chrysomphalus Dictyospermi Morg.

Synonym: Aspidiotus dictyospermi Morg., A. dictyoppermi v. arecae Newst., A. mangiferae Ckll., A. dictryospermi jamaiensis Ckll., A (Chrysomphalus) dictyospermi Ckll., Diaspis pinnulifera Mask., Chysomphalus minor Berl. et Leon., Chr. dictyospermi v. arecae Leon., Chr. dictyospermi v. mangiferae Ckll., Chr. dictyospermi pinnulifera Fern., Chr. dictyospermi minor March.

Affected crops: Citrus trees, tea shrub, olive,- pronged and mulberry trees, plum, oleander, laurel, acacia, spindle tree, camelia, privet, palm, ivy, laurel-cherry.

Quarantine measures: Disinfestation of infested plant shipments.

POMEGRANATE RED SCALE, Aonidiella Aurantii Mask.

Synonym: Aspidiotus aurantii Mask., A. citri Comst., A. coccineus Green, Aonidia gemnadii Targ., A. aurantii Targ., Chrysomphalus aurantii Ckll., Aonidiella taxus Leon.

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Affected crops: Citrus, pronged tree, persimmons, olive, pistacchio, mulberry, fig, quince, apple, grape, medlar, laurel, banana, rose, oak, tea shrubs.

Quarantine measures: Same as above.

YELLOW POMEGRANATE SCALE, Aonidiella Citrina Coq.

Synonym: Aspidiotus citrinus Coq., Aonidiella aurantii var. citrina Coq.

Affected crops: Citrus and palms.

Quarantine measures: Disinfestation of infested plant shipments and regulations at points where infested citrus fruits are used.

DESTRUCTIVE SCALE, Aspidiotus Destructor Sign.

Affected crops: Citrus, tea shrubs, holly, laurel, pepper, palms, mango, banana, walnut.

Quarantine measures: Disinfestation of infested plant shipments and regulations at points of entry of plants.

CITRUS LEAF MOTH, Diaphorina (Euphalerus) Citri Kuw.

Affected crops: Lemons, tangerines, oranges, and other plants of the Rutaceae family.

Quarantine measures: Disinfestation of planting stock and transplanting to quarantine greenhouses.

CITRUS "WHITE FLY" (Moth), Dialeurodes Citri Ashm.

Affected crops: Lemons, oranges, tangerines, grapefruit, tea shrubs, laurels, persimmons, gardenia, camphor tree, "ligustrum", jasmin, lilacs, honeysuckle.

Quarantine measures: Embargo on infested plant shipments.

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DIALEURODES CITRIFOLII MORG

Affected crops: Lemons, oranges, tangerines, grapefruit, and other citrus fruits.

Quarantine measures: Embargo on infested plant shipments.

CITRUS "JAPANESE FLY", Aleurocanthus Spiniferus Quaint.

Affected crops: Lemons, oranges, tangerines, grapefruit, grapes, Japanese persimmons, pears, roses.

Quarantine measures: Same as above.

CITRUS "BLACK FLY," Aleurocanthus woglumi Ashby.

Affected crops: Lemons, oranges, tangerines, grapefruit, coffee, mango, grapes, mulberry trees, custard apples.

Quarantine measures: Same.

ALEUROLOBUS MARLATTI QUAINT.

Affected crops: Tangerines, mulberry trees, Aphanenthe aspera, Daphniphyllum macropodum.

Quarantine measures: Same.

CICADA EINOTIFERA UHL.

Affected crops: Lemons, tangerines, olives, peaches, alfalfa, cotton.

Quarantine measures: Same.

SIPHANTA ACUTA (CICADIDAE) WALK.

Affected crops: Lemons, oranges, tangerines, grapefruit, coffee, guava, acacia, mango.

Quarantine measures: Same.

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ORANGE THRIPS, Scirtothrips Citri Moult.

Affected crops: Oranges, lemons, tangerines, grapefruit, pomegranates, olives, pecans.

Quarantine measures: Same.

FRANKLINIELLA INSULARIS FRANK.

Affected crops: Lemons, oranges, tangerines.

Quarantine measures: Same.

SILVERY CITRUS MITE, Phyllocoptes oleivorus Ashm.

Affected crops: Lemons, oranges, tangerines, grapefruit.

Quarantine measures: Embargo on infested plant shipment and regulation at points where infested citrus plants are used.

DIPLODIAL ROT

Inducer: Diplodia natalensis Evans., Physalospora rhodina (B. et C.) Cooke.

Affected crops: Tangerines, lemons, oranges, grapefruit.

Quarantine measures: Embargo on infested plant shipments and infested plants.

WART DISEASE OF CITRUS FRUITS

Inducer: Sporotrichum citri E. Y. Butler.

Affected crops: Oranges, tangerines, lemons, grapefruit, Citropsis, "kinkan."

Quarantine measures: Embargo on infested grafts, stalks, poduncles and fruits; transplanting of apparently healthy shoots and peduncles from infested shipments to quarantine plots.

CANKER OF CITRUS FRUITS

Inducer: Bacterium citri (Hasse) Doidge

Synonym: Pseudomonas citri Hasse, Phytomonas citri (Hasse) Bergey.

Affected crops: Lemons, tangerines, oranges, grapefruit, Casimiroa edulis,

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Clausena lansium, Chaetospermum glutinosum, Atalantia citriodes, A. ceylonia, Poncirrus trifoliata, Fortunella hinensis, F. japonica, F. crassifolia.

Quarantine measures: Embargo on fruits and grafts of citrus fruits from infested countries.

BACTERIAL BURN OF CITRUS FRUITS, CITRUS BLAST

Inducer: Bacterium citriputeale Smith.

Synonym: Bacterium citrarefaciens Lee., Phytomonas citriputeale (Smith) Bergey et Al., Pseudomonas citriputeale (Smith) Stapp.

Affected crops: Oranges, lemons, tangerines, jasmine, laurels, poplars, ashes, bird-elder cherry, pears, oaks, lilacs, apricots.

Quarantine measures: Rejection of infested material; non-infested plants are transplanted to quarantine nurseries or greenhouses.

PESTS AND DISEASES OF FRUIT AND BERRY, SUBTROPICAL AND ORNAMENTAL PLANTS AND CROPS.

PHYLLOXERA VASTATRIX PLANCH.

Synonym: Phylloxera vitifolii Fitch Riley, Rhizaphis vastatrix Planch. Pemphigus vitifoliae P.

Affected crops: Grapes.

Quarantine measures: Strict observance of "INSTRUCTIONS" on anti-Phylloxera quarantine.

WOOLY APPLE APHID, Eriosoma Lanigerum Hausm.

Synonym: Aphis lanigera, Myzoxylus mali Blot., Schizoneura lanigera Hausm.

Affected crops: Apples, mountain ash, plums, pears, American elm, hawthorn.

Quarantine measures: Disinfestation of infested plant shipments.

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SAN JOSE' SCALE (CALIF.), Aspidiotus Perniciosus Comst.

Synonym: Comstockaspis perniciosus Comst., Aspidiotus perniciosus albopunctatus Ckll., Aspidiotus perniciosus andromelas Ckll., Annidiella perniciosa Berl.

Affected crops: Apple, pear and peach trees, apricot, cherry, plum, almond, chereshnia (cherry); hawthorn, quince, roses, citrus trees, lilacs, linden, tung trees, and many other; altogether close to 90 plant species.

Quarantine measures: Embargo on infested plant shipments.

"TUTOVAIA" SCALE, Pseudaulacaspis Pentagona Targ.

Synonym: Diaspis pentagona Targ., Tozz., D. amygdale Tryon., D. lanatus Morg. et Ckll., D. patelliformis Sasaki, D. auranticola Ckll., D. amygdali v. rubra Bask., Howardia prunicola Kirk., Sasakiaspis pentagona Targ., Aulacaspis pentagona Targ.

Affected crops: Mulberry trees, walnuts, currants, gooseberries, horse chestnut, laurel-cherry, spindle tree, Gleditchia, oleander, almont, elm, lilac, Sophora.

Quarantine measures: Same.

MEALY SCALE OF GRAPES, Pseudococcus Citri Risso.

Synonym: Dorthesia citri Risso, Dactylopius ficus Sign., D. alaterni., D. indicus., D. lavandulae Sign., D. destructor Comst., D. longispinus Kennen, D. ceratoniae Sign., D. brevispinus Targ., Boisduvalia quadricaudata Sign., Lecanium phyllococcus Ashm., Coccus citri Boisd., C. vitis Pied., Ondabilis quadricaudata Ckll., Pseudococcus alaterni Fern., P. ficus Fern., P. indicus Fern., P. quadricaudatus Farn., P. (Dactylopius) vitis Nedz., P. vitis Nedz.

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Affected crops: Grapes, figs, apricots, mulberry trees, barbery, tobacco, ivy, citrus, tea shrubs, pronged tree, olive, pineapple, coffee, cocoa, cotton, oleander, banana, viburnum, lavender, buckthorn.

Quarantine measures: Same.

JAPANESE CAMPHOR SCALE, Pseudaonidia Duplex Ckll.

Synonym: Aspidiotus theae Mask., A. (Evaspidiotus) theae Mask., A. duplex Ckll., A. theae var., rhododendri Green. P. rhododendri Green, P. rhododendri thearum Fern.

Affected crops: Lemons, tangerines, oranges, tea shrubs, olive, fig trees, Japanese persimmons, apples, pears, and grapes.

Quarantine measures: Embargo on infested plant shipments.

WAXY FIG SCALE, Ceroplastes Rusci Linn.

Synonym: Coccus rusci L., C. caricae Bern., C. artemisiae Rossi, Calypticus radiatus Costa, C. testudineus Costa, C. hydatrix Costa, Columnea testudinata Targ. Tozz., C. testudiniformis Targ.-Tozz., Chermes caricae Boisd., Ceroplastes rusci Sign., C. artemisiae Sign.

Affected crops: Figs, palms, tangerines, oranges, lemons, medlars, mulberry trees, oleander, peach, pistacchio, pomegranates, roses, grapes, myrtle, mastic tree; as well as many stone fruits.

Quarantine measures: Same.

POLLINIA SCALE, Pollinia Pollini Costa.

Affected crops: Olive trees.

Quarantine measures: Same.

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OLIVE TREE SCALE, Saissetia Oleae Bern.

Synonym: Chermes oleae Bern., Coccus oleae Oll., C. palmae Raw., C. testudo Curtis., C. cycadia Boisd., Lecanium oleae Walk., L. cassiniae, Mask., L. oleae v. testudo Ckll., L. oleae v. mirandum Ckll., Bernardia oleae Ckll., Neobernardia oleae Ckll.

Affected crops: Lemons, tangerines, oranges, olive, grapes, apples, pear, apricot, plum, pomegranate, pistacchio, laurel, quince, walnut, magnolia, tea shrubs, mulberry trees, oleander, elm.

Quarantine measures: Same.

JAPANESE BEETLE, Popillia japonica Newm.

Affected crops: Vegetable, fruit and ornamental plants. List of edible plants affected by this pest exceeds 200 species.

Quarantine measures: Embargo on infested plant shipments.

JAPANESE OPAL COCKCHAFER (BEETLE), Aserica Japonica Motsch.

Synonym: Aserica castanea Arr., Autoserica castanea Arr., Haladera japonica Motsch.

Affected crops: Lemons, tangerines, tung tree, apple, sunflower, carrots, bean, batata, rhubarb, ivy, strawberry (over 50 species of other plants).

Quarantine measures: Same.

APPLE MOTH, Agrilus Mali Mats.

Affected crops: Apple trees.

Quarantine measures: Same.

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FRUIT BARK-EATER, Coccotrypes Dactyliperda F.

Synonym: Coccotrypes palmicola Horn., C. laboulbenei Dec., Dryococtes dactyliperda F., D. dactyliperda v. obscurus Rey., D. laboulbenei Dec., Anisandrus dactyliperda F. Bostrychus palmicolor Horn., B. dactyliperda F.

Affected crops: Fruits of palm trees.

Quarantine measures: Disinfestation of infested plant shipments.

EASTERN PEACH MOTH, Laspeyresia Molesta Busck.

Synonym: Cydia molesta Busck., Grapholitha molesta Busck.

Affected crops: Fruits of peach, plum, apricot and apple trees.

Quarantine measures: Embargo on infested plant shipments.

OLIVE TREE MOTH, Prays Oleellus Fabr.

Synonym: Atemelia oleella Fabr., Oecophora oleella Fabr.

Affected crops: Olive trees.

Quarantine measures: Disinfestation of infested shipment and regulation at points of entry and use of plants.

PEAR SNOUT MOTH, Numonia Pyrivolella Mots.

Synonym: Nephopteryx pyrivorella Mots., N. rubrizonella Mats., Numonia pyrivora Gerasimov.

Affected crops: Pears.

Quarantine measures: Embargo on infested plant shipments.

APPLE FLY, Rhagoletis pomonella Walsh.

Synonym: Rhagoletis zephyria Snow., R. symphoricarpi Curr.

Affected crops: Fruits of apple, pear, plum, cherry trees, hawthorn, chereshnia, bilberry (foxberry), wild plum tree (blackthorn).

Quarantine measures: Same as above.

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OLIVE TREE FLY, Dacus Oleae Gmel.

Affected crops: Olive trees.

Quarantine measures: Same.

BLACK FIG FLY, Lonchaea Aristella Beck.

Affected crops: Figs.

Quarantine measures: Same.

GLADIOLUS THRIPS, Taeniothrips Gladioli Hand.

Affected Crops: Tigridia, Tritonia, Coreopsis, Gladiolus, Knophofia.

Quarantine measures: Disinfestation of infested plant shipments and regulation at points of entry and places where bulbs are used.

STRAWBERRY NEMATODE, Aphelenchoides Fragariae Ritz-Bos.

Synonym: Aphelenchus ormerodis (ormeroides) Fegen.

Affected crops: Strawberries, (garden and wild), chrysanthemums, begonia.

Quarantine measures: Embargo on infested plant shipments.

CURRANT NEMATODES, Aphelenchoides Ribis Taylor

Affected crops: Currants and gooseberries.

Quarantine measures: Same.

GALL NEMATODE, HETERODERA MARIONI CORTU.

Synonym: Heterodera radicicola Greef-Müller.

Affected crops: Ornamental, vegetable, fruit, technical, medicinal, ether-oil plants; altogether about 1500 species of plants.

Quarantine measures: Embargo on infested plant shipments; ornamental plants are included because they are imported from abroad on the roots of above plants.

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CANKER OF STONE FRUITS

Affected crops: Cherries, plums.

Quarantine measures: Embargo on infested plant shipments.

(DOTTED) SPOTTINESS OF APPLES

Affected crops: Apple trees.

Quarantine measures: Embargo on infested planting stock and infested fresh fruits.

SPIDER DISEASE

Inducer: Corticium stevensii Burt.

Synonyms: Hypochnopsis ochroleuca Noack.

Affected crops: Fruit trees, apple, pears, plum, peach; subtropical, citrus, tung tree, tea shrub, etc.

Quarantine measures: Same.

BITTER ROT

Inducer: Gloeosporium fructigenum Berk.

Synonym: Gnomoniopsis fructigena Clin., Glomerella rufomaculans Sp. et Scher.

Affected crops: Apple, quince, cherry, plum, apricot, peach, grape, Viburnum, lemons, and other orchard and vegetable crops.

Quarantine measures: Embargo on shipments of infested fresh fruits of above crops; transplanting of planting stock to quarantine greenhouses following disinfestation.

RED ROT OF USSURI PLUM

Inducer: Polystigmina ussuriensis (Naoum) Proc.

Synonym: Polystigma ussuriensis (Jacz. et Nat.) Proc. Rhodoseptoris ussuriensis Naoum. Polystigmella ussuriensis Jacz et Net.

Affected crops: Plum and cherry.

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Quarantine measures: Import of defoliated grafts; their subsequent rinsing in solution of copper sulfate or formalin, and keeping at quarantine greenhouses away from sections of industrial production.

WET ROT OF SUBTROPICAL CROPS

Inducer: Thielaviopsis paradoxa (De Seynes) von Hohnel.

Affected crops: Pineapples, dates and cocoa palms, olive palms, sugar cane, banana, cocoa, cabbage palm, muscus squash, mango trees, fig trees.

Quarantine measures: Embargo on infested plants. Non-infested plants are transplanted to quarantine greenhouses following their disinfestation; importation of infested shipments of fruits of above plants into subtropical zones is prohibited.

ORANGE RUST

Inducer: Gymnoconia peckiana (Howe) Trotter Kunkelia nitens (Schw) Arth.

Affected crops: "kniazhenika", a raspberry Rubus arcticus, Rubus saxatilis, and other species of raspberries.

Quarantine measures: Transplanting to quarantine, greenhouse of grafts that do not exhibit outward symptoms of the disease.

TEXAS ROOT ROT

Inducer: Phymatotrichum omnivorum Schear.

Synonym: Ozonium omnivorum Schear.

Affected crops: Over 300 species of plants, technical, vegetable, fruit, ornamental, etc.

Quarantine measures: Embargo on import of plants and soil specimens from states

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where Texas root rot prevails.

CANKER OF CHESTNUT

Inducer: Endothia parasitica (Murr.) And. et And.

Synonym: Endothia gyrosa var. parasitica (Burr.) Clinton.

Affected crops: Chestnut, oak, maple, Carya ovata, Rhus typhina.

Quarantine measures: Prohibition to import from infested countries planting stock, fruits and lumber of above genera.

DUTCH ELM DISEASE

Inducer: Graphium ulmi Schw.

Affected crops: Elms, English elm, and Ulmus densa.

Quarantine measures: Prohibition to import planting material in crates made of elm; examination of seeds at quarantine greenhouses.

BACTERIAL BURN OF FRUIT TREES

Inducer: Bacterium amylovorum (Burrill).

Synonym: Micrococcus amylovorus Bur., Erwinia amylovora (Burrill), Bacillus amylovorus (Bur.) de Toni.

Affected crops: Apple, pear, rose, raspberry, medlar, quince, plum, cherry, chereshnia, persimmon, mountain ash, June berry, almond, hawthorn, strawberry, cornel (dogwood), apricot, peach, spirea, nuts, Chaenomeles lagenaria, Photinia avillosa.

Quarantine measures: Embargo on infested plant shipments; the balance of grafted and planting stock is transplanted at quarantine greenhouses.

ROOT CANKER OF FRUIT TREES - POLYPODIUM

Inducer: Bacterium tumefaciens Smith et Townsend.

Synonym: Pseudomonas tumefaciens (Smith et Townsend) Stevens. Phytomonas

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tumefaciens (Smith et Townsend) Bergey. Polymonas tumefaciens, Lieske.

Affected crops: Roses, quince, raspberries, apple, pear, plum, grape, hawthorne, spindle tree, eucalyptus, laurel, olive trees, etc.

Quarantine measures: Rejection of visibly diseased plants; the rest are disinfested.

TUBERCULOSIS OF OLIVE TREES

Inducer: Bacterium savastanoi (E.F. Smith) Stevens.

Synonym: Pseudomonas savastanoi (E.F. Smith) Stevens. Phytomonas savastanoi E.F. Smith) Bergey. Bacillus oleae tuberculosis savastanoi. Bacterium oleae Arcangeli.

Affected crops: Olive, snow tree, jasmine, ash, Forestieria acuminata (Adelia acuminata) Osmanthus aquifolium.

Quarantine measures: Embargo on infested plant shipments.

BURN OF MULBERRY TREE

Inducer: Bacterium mori (Boyer et Lambert) Smith.

Synonym: Pseudomonas mori (Boyer et Lambert) Stevens, Phytomonas mori (Boyer et Lambert) Bergey.

Affected crops: Mulberry trees.

Quarantine measures: Segregation of infested material on the basis of it's appearance; healthy material is permitted to enter but is disinfected prior to transplanting.

PESTS AND DISEASES OF TECHNICAL CROPS.

Elongated scale, "Podushechnitsa," Pulvinaria floccifera Westw.

Synonym: Coccus floccifera W., Pulvinaria camelicola Sign., P. Linearis Targ., P. phajae Ckll., P. brassicae Ckll. P. floccosa Westw.

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Affected crops: Lemon tangerine, orange, spindle tree, "noble" camphor laurel, tea shrub, ivy, cabbage, tobacco, holly.

Quarantine measures: Disinfestation of infested plant shipments.

BLACK BAMBOO SCALE, Antonina bambusae Mask.

Synonym: Sphaerococcus bambusae Mask., Chaetococcus bambusae Mask.

Affected crop: Bamboo

Quarantine measures: Importation of roots only is allowed and their disinfestation is compulsory.

BAMBOO SCALE, Asterolecanium Bambusae Boisd.

Synonym: Planchonia bambusae Charm., Pl. fimariata v. bambusae (Boisd) Mask., Pl. (Asterolec) bambusae (Boisd) Mask., Bambusaspis bambusae (Boisd.)Ckll.

Affected crops: Bamboo.

Quarantine measures: Same as above.

SCALE OF NEW ZEALAND FLAX, Trionymus Diminutus (Leon) Morr.

Synonym: Dactylopius calceolariae, Pseudococcus diminutus Leon.

Affected crops: New Zealand flax.

Quarantine measures: Embargo on infested plant shipment.

"PASMO" (of flax)

Inducer: Phlyctaena linicola Speg.

Synonym: Sphaerella linorum Woll

Affected crops: Flax.

Quarantine measures: Embargo on seeds, straw and products of initial processing of flax.

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ROOT ROT OF SUBTROPICAL CROPS

Inducer: Botryodiplodia theobromae Pat.

Affected crops: Tea shrub, grapefruit, orange, cocoa, sugar cane, cocoa palm, Albizzia moluccana, Hevea.

Quarantine measures: Embargo on infested plant shipments. Transplanting of healthy tea seedlings (shoots) and other susceptible crops at quarantine greenhouses, following the cleaning and disinfecting of the soil.

PESTS AND DISEASES OF VEGETABLE CROPS

COMMON BATATA WEEVIL, Cylas Formicarius Fabr.

Synonym: Cylas turcipennis Schvenh.

Affected crops: Different varieties of batata.

Quarantine measures: Embargo on infested shipment. This measure is applied to all other weevils injurious to batata tubers.

MELON FLY, Myiopardalis Pardalina Big.

Synonym: Carpomyia caucasica Zaitz.

Affected crops: Melon, watermelon, cucumber, and other Cucurbitae.

Quarantine measures: Embargo on fruits of Cucurbitae.

EASTERN MELON FLY, Bactrocera Cucurbitae Cock.

Synonym: Dacus cucurbitae Cook.

Affected crops: Melon, watermelon, cucumber, and other Cucurbitae.

Quarantine measures: Embargo on fruits of Cucurbitae.

STEM ROT OF BATATA

Inducer: Fusarium bulbigenum var. batatas Cooke et Massee, Fusarium oxysporum Schl. f. Wr.

Synonym: Fusarium batatatis Wr., Fusarium hyperoxysporum Wr.

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Affected crops: Batata.

Quarantine measures: Destruction of infested tubers; transplanting of healthy tubers at quarantine greenhouses, following cleansing and treatment of the soil.

BLACK JAVA ROT

Inducer: Macrophoma edulis Alm., Diplodia tubericola Taub.

Affected crops: Batata.

Quarantine measures: Same as above.

BLACK ROT OF BATATA.

Inducer: Ceratostomella fimbriata (E. et H.) Ell.

Synonym: Sphaeronema fimbriata (E. et H.) Sacc.

Affected crops: Batata.

Quarantine measures: Destruction of diseased tubers, runners, grafts; transplanting of healthy grafts to quarantine greenhouse; following cleansing and treatment of the soil.

CABBAGE WILT

Inducer: Fusarium conglutinans Fr.

Affected crops: Cabbage, turnips.

Quarantine measures: Planting of seeds of Cruciferae on quarantine or other isolated plots previously treated.

DRY ROT

Inducer: Phoma lingam (Tode) Desm.

Synonym: Plenodomus lingam (Tode) v Hoehn., Plenodomus rabenhorstii Preuss., Phyllostiota brassicae West.

Affected crops: Cabbage, kohlrabi, turnips, mustard, phaseolus sugar beets.

Quarantine measures: Same as above.

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SMUT OF ONION

Inducer: Urocystis cepulae (Frost) Liro.

Synonym: Tuburcinia cepulae Fr.

Affected crops: Onion and all species of Allium.

Quarantine measures: Destruction of diseased onion seedlings (shoots); treatment of healthy specimens and regulation of regions of planting.

RUST OF SUGAR BEET

Inducer: Uromyces betae Lev.

Affected crops: Sugar beet, Beta maritima, B. oiclo.

Quarantine measures: Restrictions on importation of seeds from abroad; planting of imported seeds on isolated plots previously treated.

SOUTHERN SCLEROTIAL ROT

Inducer: Sclerotium Rolfsii Sacc.

Synonym: Corticium centrifugum (Lev) Bres. Hypochnus centrifugus Tul.

Affected crops: Vegetable, melon, peanut, potato, tobacco and over 150 species of other ornamental, floral, technical, and fruit plants.

Quarantine measures: Transplanting of root crops, bulbs, tubers, grafts, seedlings, and underground seeds to quarantine greenhouses or plots previously cleansed and treated; regulation at points where planting material is used.

BACTERIAL CANKER OF TOMATOES

Inducer: Aplanobacter michiganense E. F. Smith.

Synonym: Bact. michiganense E.F. Smith., Pseudomonas michiganense (E.F. Smith) Stevens, Phytomonas michiganense (E.F. Smith) Bergey.

Affected crops: Tomatoes, black Solanum, S. nammosum.

Quarantine measures: Restriction on importation of seeds of above plants;

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planting of imported seeds on quarantine plots; prohibition to import tomato fruits.

PESTS, DISEASES AND WEEDS OF GRAIN-LEGUMINOUS CROPS.

CHINESE WEEVIL, Callosobruchus Chinensis L.

Synonym: Pachymerus chinensis L., Bruchus chinensis L., B. scutllaris F., B. pectinicornis L.

Affected crops: Soya, pea, phaseolus, lentil, cowpea, Cassia corymbosa, Crotolaria capense, Cajanus indicus, Vigna oligosperma.

Quarantine measures: Disinfestation of seeds and phaseoli.

4-SPOTTED WEEVIL, Callosobruchus Quadrimaculatus Fabr.

Synonym: Pachymerus quadrimaculatus P., Bruchus quadrimaculatus P. Dolichos lablab., D. lignosus, Cajanus indicus.

Affected crops: Pea, cowpea, phaseolus, soya, chick-pea, Dolichus lablab. D. Lugnosus, Cajanus indicus.

Quarantine measures: Disinfestation of seeds and beans.

PHASEOLUS WEEVIL, Acanthoscelides Obtectus Say.

Synonym: Acanthoscelides obsoletus Say., Bruchus obsoletus Say., B. obtectus Say., B. pollidipes Tahr., B. bremeri Grotch., B. subellipticus Woll., B. fabae Titch., Bruchidius obtectus Say., B. irrisectus Fabr., Laria irrisecta Tahr., L. obtecta Say., Mylabris irrisecta Tahr., M. obtectus Say.

Affected crops: Bean, lentil, pea, phaseolus, soya.

Quarantine measures: Disinfestation of seeds.

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MIMOSA WEEVIL, Acanthoscelides Mimosae F.

Synonym: Mylabris mimosae Baudi., Bruchus mimosae F.

Affected crops: Seeds of phaseoli, mimosa, Cassia fistulata, Caesalpinia cariara.

Quarantine measures: Disinfestation of seeds and phaseoli.

PEANUT WEEVIL, Pachmerus Pallidus Oliv.

Synonym: Pachymerus germanii Kust., P. pallidus Schil., Bruwhus pallidus Oliv. Caryoborus pallidus Baudi.

Affected crops: Peanut.

Quarantine measures: Disinfestation of seeds and phaseoli.

CLOVER WEEVIL, Bruchidius Trifoli Kot.

Synonym: Bruchus trifolii Kot.

Affected crops: Clover - Trifolium pratense, T. alexandrinum.

Quarantine measures: Disinfestation of seeds.

BRUCHIDIUS ALFIERI PIC.

Synonym: Bruchus alfieri Pic.

Affected crops: Clover.

Quarantine measures: Disinfestation of seeds.

EGYPTIAN PEA WEEVIL, Bruchidius Incarnatus Boh.

Synonym: Bruchus incarnatus Schm.

Affected crops: Pea, lentil, chick-pea, Vicia faba, Cajanus indicus.

Quarantine measures: Disinfestation of seeds.

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BRUCHUS ULICIS FAECK.

Affected crops: Lentils.

Quarantine measures: Disinfestation of seeds.

BRUCHUS ANALIS F.

Affected crops: Dolichos lablab., D. sinensis, Physostigma venosum, Cicer arietinum.

Quarantine measures: Disinfestation of seeds.

BRUCHUS ORNATUS BOH.

Synonym: Pachymerus ornatus Boh.

Affected crops: Pea, chick-pea, Viciae sinensis, Dolichos lablab.

Quarantine measures: Same as above.

BRASILIAN PHASEOLUS WEEVIL, Zabrotes subfasciatus Boh.

Synonym: Spermophagus subfasciatus Boh., Sperm. pectolallis Say., Sperm. musculus Boh.

Affected crops: Pea, phaseolus, cowpea, Dolichos lablab. D. sesquipedalis.

Quarantine measures: Disinfestation of seeds.

STEM RICE MOTH, Chilo Simplex Butler.

Synonym: Schoenobius simplex Butler, Chilo oryzae Fletcher.

Affected crops: Rice, corn, foxtail millet, sorghum.

Quarantine measures: Destruction of straw of above crops, used for packing freights subject to quarantine and arriving from countries where the pest is spread.

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SOYA MOTH, Eucosma Glycinivorella Mats.

Synonym: Laspeyresia glycinivorella Mats., Crapholitha glycinivorella Mots.

Affected crop: Soya.

Quarantine measures: Disinfestation of infested plant shipment.

SORGHUM GALL (FLEA, MOSQUITO), Contarina Corghicola Cog.

Affected crops: Sorghum.

Quarantine measures: Embargo on infested seed shipment.

SMUT OF RICE

Inducer: Tilletia horrida Tak.

Affected crops: Rice.

Quarantine measures: Embargo on infested seeds of rice and straw; planting of non-infested seeds for tests on quarantine plots; rice for food consumption is not subject to quarantine restrictions.

STEM SMUT OF WHEAT

Inducer: Urocystis tritici (Koern.) Lir.

Synonym: Tuburcinia tritici Koern.

Affected crops: Wheat.

Quarantine measures: Conditions for importing wheat and it's use are in every individual case determined by the Sector of Foreign and Domestic Plant Quarantine of NKZ of USSR.

INDIAN WET SMUT OF WHEAT

Inducer: Tilletia indica Mitra.

Affected crops: Wheat.

Quarantine measures: Same as above.

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WET SMUT OF BARLEY

Inducer: Tilletia puncicii Bub. et Han.

Affected crops: Barley.

Quarantine measures: Same as above.

DRY ROT (DIPLODIA) OF CORN

Inducer: Diplodia zeae (Schw.) Lev.

Synonym: Phaeostagonosporopsis zeae (Schw.) Worch.

Affected crops: Corn.

Quarantine measures: Embargo on infested shipment; planting of seeds of corn, visibly non-infested by diplodia on isolated plots.

ANTHRACNOSE OF CLOVER

Inducer: Colletotrichum trifolii Bain. and Essary.

Affected crops: Clover, alfalfa, sweet clover.

Quarantine measures: Treatment of clover, sweet clover, and alfalfa seeds imported from infested countries and their planting in far regions under special field supervision,

BACTERIAL WILT OF CORN

Inducer: Bacterium stewarti (E.F. Smith).

Synonym: Aplanobacter stewarti (E.F. Smith) McCulloch., Pseudomonas stewarti., Phytomonas stewarti (E.F. Smith) Bergey.

Affected crop: Corn.

Quarantine measures: Planting of corn seeds on isolated or quarantine plots.

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BACTERIUM OF PHASEOLUS

Inducers: Bacterium medicaginis var. phaseolicola, Bact. flaccumfaciens, Bact. phaseoli, Bact. phaseoli v. fuscans.

Synonym: Phytomonas medicaginis var. phaseolicola (Burkholder), Phytomonas flaccumfaciens (Hedges) Bergey. Pseudomonas flaccumfaciens (Hedges) Stapp. Bacillus phaseoli E.F. Smith. Pseudomonas phaseoli E. F. Smith. Phytomonas phaseoli (E.F. Smith) Bergey. Phytomonas phaseoli var. fuscans (Burkholder).

Affected crops: Phaseoli, cowpeas, soya, Dolichos lablab.

Quarantine measures: Embargo on infested and suspicious shipments of seeds.

BACTERIAL WILT OF ALFALFA

Inducer: Bacterium insidiosum (McCulloch) Stapp.

Synonym: Aplanobacter insidiosum McCulloch. Phytomonas insidiosum (McCulloch) Bergey.

Affected crops: Alfalfa and sweet clover.

Quarantine measures: Planting of seeds of alfalfa and sweet clover in a limited number of regions under special field observations.

BACTERIAL BURN OF STEMS OF ALFALFA

Inducer: Bacterium medicaginis (Sacket) E. F. Smith.

Synonym: Pseudomonas medicaginis Sacket, Phytomonas medicaginis (Sacket) Bergey.

Affected crops: Alfalfa, sweet clover.

Quarantine measures: Same as above.

QUARANTINED WEEDS

Quarantine measures applied to all quarantined weeds consist in the requirement that seeds or planting material of various crops be imported free

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of weeds. The latter are listed below:

1. Actinea odorata A. Gray
2. Manisuris granularis L.
3. Helianthus Maximiliani Schrad.
4. Silene linicola D.
5. Cenchrus tribuloides L.
6. Eleusine aegyptica Desf.

Material not free of weeds is retained in the port, or in the custom office and the question about the utilization of this material has to be solved in each separate case by the People's Commissariat of Agriculture USSR.

In discovering the following weeds:

1. Axyris amaranthoides L.
2. Ambrosia artemisiefolia L.
3. Ambrosia maritima L.
4. Ambrosia trifida L.
5. Cephalaria syriaca Schrad.
6. Echinochloa oryzicola Vasing.
7. Echinochloa macrocarpa Vasing.
8. Solanum rostratum Dunal.
9. Solanum heterodoxum Dunal.
10. Commelina communis L.
11. Cuscuta.
12. Sorghum halepense L.
13. Paspalum distichum L.
14. Acroptilon picris CAM.
15. Danthonia calycina Vill.
16. Cynanchum acutum L.

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17. Thermopsis lupinoides L.

18. Cynodon dactylon Pers.

19. Sophora alopecuroides L.

20. Sophora pachycarpa CAM.

21. Cyperus rotundus L.

Quarantine material is cleansed of above weeds and is used in regions determined by the Narkomzem of USSR.

ACTINEA ODORATA A. Gray

Synonym: Hymenoxis odorata D.C.

Infested crops: Grasses.

XANTHURIS GRANULARIS L.

Synonym: Cenchrus granularis L.

Affected crops: Orchard, meadow.

SUNFLOWER MAXIMILIAN, Heliantus maximiliani Schrad.

Affected crops: Grain and meadow.

FLAX CATCHFLY, Silene Linicola D.

Affected crop: Flax.

CENCHRUS TRIBULOIDES L.

Affected crops: Grain and meadow.

ELEUSINE AEGYPTICA DESF.

Synonym: Cynosurus aegypticum L. Dactyloctenium aegypticum W.

Affected crops: Grain and fruit.

AXYRIS AMARANTHOIDES L.

Affected crops: Grain, clover, sweet clover.

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AMBROSIA ARTEMISIEFOLIS L.

Affected crops: Clover and alfalfa.

AMBROSIA MARITIMA L.

Affected crops: Clover, alfalfa, hemp.

AMBROSIA TRIFIDA L.

Affected crops: Clover and grain.

CEPHALARIA SYRIACA SCHRAD.

Affected crops: Wheat, rye, barley.

RICE MILLET, Echinochloa Oryzicola Vasing.

Synonym: Panicum oryzicola Vasing.

Affected crops: Rice.

LARGE-GRAINED MILLET, Echinochloa Macrocarpa Vasing.

Affected crops: Rice.

SOLANUM ROSTRATUM DUNAL.

Affected crops: Grain and till crops and grasses.

MEXICAN SOLANUM, Solanum Heterodoxum Dunal.

Affected crops: Grain, till, and grass crops.

BLUE-EYE, Commelina Communis L.

Affected crops: Wheat, rye, barley, oats, millet, flax.

ALL SPECIES OF DODDER, Cuscuta.

Affected crops: Flax, clover, alfalfa, etc.

JOHNSON (GUINEA) GRASS, Sorghum Halepense L.

Synonym: Andropogon halepensis Brot., Holmus halepensis L.

Affected crops: Sudan, sorghum, cotton.

TWO-ROW BUCKWHEAT, Paspalum Distichum L.

Synonym: Paspalum digitaria Poir.

Affected crops: Rice, corn, tea plantations.

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SMARTWEED (?), "Gorchak," Acroptilon Picris Cam.

Synonym: Centaurea picris Pall., Seratula picris M. B.

Affected crops: Alfalfa, clover, vegetable and technical.

DANTHONIA CALYCINA Vill.

Synonym: Avena calycina Vill.

Affected crops: Grasses.

SHARP MILKWEED, Cynanchum Acutum L.

Affected crops: Cotton, wheat, barley.

THERMOPSIS LUPINOIDES L.

Affected crops: Cereals.

BERMUDA (SCUTCH) GRASS, Cynodon Dactylon Pers.

Synonym: Panicum dactylon L., Capriola dactylon Kuntze.

Affected crops: Grain and till crops, cotton, orchard and vegetable.

SOPHORA ALOPECUROIDES L.

Synonym: Goebelia alopecuroides Bge.

Affected crop: Grain.

SOPHORA PACHYCARPA CAM

Affected crops: Wheat, cotton.

ROUND CYPERUS, Cyperus Rotundus L.

Affected crops: Alfalfa, grain, rice, cotton "dzhugara."

PESTS OF STORED CROPS.

WIDE-SNOUTED STORAGE WEEVIL, Caulophilus Latinasus Say.

Affected crops and food stores: Wheat, barley, peas, corn, figs, avocado, acorns, batata, ginger, macaroni, millet.

Quarantine measure: Disinfestation of infested seed and storage freights.

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CORN WEEVIL, Calandra Zea-Mays Motsch.

Affected crops and food stores supplies: Corn, rice, wheat.

Quarantine measures: Same as above.

GRAIN BEETLE, Rhizopertha Dominica Fab.

Synonym: Rhizopertha pusilla F. Apate frumentaria Norde.

Affected crops and food stores: Wheat, rice, barley, rye, oats, corn.

Quarantine measures: Same as above.

SIAM "FLAT-BODY," Lophocateres Pusillus Klug.

Affected crops and food stores: Wheat, barley, corn, rice, peanuts, products of baking industry, flour and dry food products.

Quarantine measures: Disinfestation of infested seed and food supplies.

AUSTRALIAN "MAKE-BELIEVE," Ptinus Tectus Boield.

Synonym: Synopterus tectus Boild, Ptinus ocellus Broum.

Affected crops and food supplies: Corn, wheat and other grains; cocoa beans, muscat nuts, almonds, figs and other dry fruits.

Quarantine measures: Same as above.

TROGODERMA GRANARIA Everts.

Synonym: Trogoderma Khapra Arrow.

Affected crops and food stores: Wheat, corn, barley, maize, beans, and food stores.

Quarantine measures: Same as above.

RICE MOTH, Corcyra Cephalonica St.

Synonym: Melissoblaptes cephalonica Staint., Melissoblaptes translineella Reg-Hamps., Tineopsis theobromae Dyar.

Affected crops and food stores: Cocoa-beans, rice, grains, chocolate, crackers, biscuits, dry fruits.

Quarantine measures: Same as above.

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PINK CORN SCALE, Pyroderces Rileyi Wals.

Synonym: Batrachedra rileyi Wals.

Affected crops and food stores: Corn, sorghum, seeds of Lanatana, cotton, Pandanus, fruits of palms, bananas.

Quarantine measures: Disinfestation of infested seed and food shipments.

APPENDIX TO "LIST OF PESTS, DISEASES AND WEEDS OF AGRICULTURAL PLANTS, OBJECTS OF FOREIGN QUARANTINE," ESTABLISHED FOR USSR FOR 1940.

RUST OF CHERRY

Inducer of disease: Thekopsora pseudocerasi Hiratsuna

Affected crop: Cherry.

Quarantine measures: The importation of seedling and graft material from Japan and Manchuria is permitted on condition that the packing is changed and graft and planting stock are disinfested.

GREENHOUSE DISEASE

Inducer: Marssonina mali. (Henn.) Magn.

Affected crop: Apple tree.

Quarantine measures: The importation from Japan and Manchuria of planting and graft material is prohibited.

LEAF ROLL OF APRICOTS

Inducer: Taphrina mume Nishida

Affected crops: Apricot.

Quarantine measures: Importation of planting and graft material from Japan and Manchuria is prohibited.

AMF
August 17, 1951.

END OF PAMPHLET.

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Sel'skokhoziaistvannyi slovar' spravochnik [Agricultural dictionary reference handbook]. Ed. 3. Moskva, 1937, 1523 p.

Transl. 27.
Translated in part by S. H. Monson.

PLANT PROTECTION. (p. 360-361)

Plant protection represents the aggregate of measures directed towards the destruction of agricultural pests and the reduction of their harmful activity. Socialist reconstruction in agriculture has established organized planned plant protection to be used by collective and state farms in place of the prevailing primitive protection of individual plots from invasions of various enemies of plants, which frequently led to driving pests over to neighboring plots. The industrialization of the country, the development of Soviet science and technique offered the opportunity to mobilize powerful means as aviation to control pests and diseases. Measures taken for the protection of plants represent a complex of cultural-econimic, mechanical, biological, chemical methods of control. Among cultural-economic measures are: Adequate soil cultivation, plowing of stubble, fertilization, use of resistant varieties, weed control, crop rotation, etc. Among mechanical methods: Crushing caterpillars under rollers; catching butterflies in nets, setting traps for rodents, use of caterpillar traps, etc.; manual gathering of pests; digging of boundary ditches; shaking beetles from trees; application of adhesive and trapping rings, belts, etc. Among biological methods: Use of vertebrates (skunks, weasels, owls, etc.) and invertebrates (beetles, flies, etc.) to destroy agricultural pests. Among chemical methods: Destruction of pests by spraying or dusting with poisons of internal or external action and poisoned attractants. All poisons are applied with the aid of special apparatus, knapsack, horse and motor. The aviation chemical method in destroying pests (chiefly locusts) has been widely applied in the USSR.

Supervision of these measures on plant protection is provided at centers by special departments on pest control, assigned to the main administrations of MTS

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of USSR and NKCKH. On location these measures are conducted under the supervision of branches, sectors or groups, consisting of leading administrations of krai (territory) and oblast land administrations. At collective farms not serviced by MTS, supervision over measures on plant protection is exercised by regional land organizations, and where MTS are in operation, by specialists, technicians on pest control, MTS, or agronomists.

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QUARANTINE (p. 448 - 449.)

Quarantine in:

1. Husbandry, consists in isolating animals during a definite period under veterinary observation in order to prevent the bringing in and spread of infectious diseases. All animals (and poultry) destined for farms should in compulsory order pass through 2 to 3 weeks period of quarantine prior to joining the herds. They are submitted to veterinary-sanitary processing. Every large farm must have a special plot reserved for quarantine, which represents an independant economic unit (Separate pastures, watering places, medicines, veterinary personnel, etc.). Upon observing some infectious disease among the animals, veterinary observation establishes a quarantine which is lifted by the veterinary surgeon, upon the termination of the disease only following an established period, which depends upon the nature of the disease; i.e., from two weeks to several months. It is prohibited to lead out and bring in animals susceptible to contagious diseases, to organize,set up,markets, fairs; other measures are introduced for preventing the spread of a contagious disease. Prior to lifting a quarantine in infested quarters they must be disinfected.

2. Quarantine in Plant Industry consists in keeping particularly harmful pests and plant diseases within the boundaries of a farm, region (internal, domestic quarantine) and the prohibition to import from abroad new pests and diseases (external, foreign quarantine). A special Quarantine Service has been set up at the NKZ of USSR. Legislation has been introduced on cotton, potato, orchard, viniculture crops, etc. Quarantine inspection is operating in oblasts (s), territories (krai), republics. On November 20, 1934, SNK of USSR issued a decree establishing a strict system of domestic and foreign quarantine measures.

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MELIORATION P. 720 - 721)

Melioration in agriculture presents a basic improvement of soils (for the purpose of obtaining high and resistant yields in fields calculated for a prolonged period of time. Melioration is of hydro-technical and agro-technical (agro-meliorative) nature. Hydro-technical melioration includes:

1. Sprinkling irrigation; i.e., introducing water into the soil, in order to create conditions favorable for plant growth, and the correlation of water and air.

2. Fertilizing irrigation; i.e., introduction of water into the soil containing nutritious substances for plants (sewage water from cities, waste water from some industrial enterprises), or the establishment of so-called "Fields of irrigation".

3. Heating irrigation; i.e., heating the soil with water warmer than the soil.

4. Washing of salty soils to eliminate the content of excess salts harmful to plants.

5. Drainage; i.e., diversion of excess water.

6. Control of soil erosion, the development of ravines and floods.

7. Ventilation, (aeration) drainage to increase exchange of air.

The principal measures in agro-technical melioration are: Uprooting of stumps; cleaning of fields or meadows from brush; removal of stones, cutting of hillocks; leavening of depressions; initial plowing; control of drifting sands and development of ravines by introducing tree shelterbelt plantings, initial liming, and marling of heavy soils.

Irrigation and drainage work are practiced on a wide scale in USSR and are closely connected with navigation and the use of water power, fishing, the organization of territories, development of the railroad network, populating of uninhabited territories, and sanitary and economic measures.

AMP
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END OF ARTICLE.

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Strogonov, B. P.
Growth stimulators as measure for control of preharvest drop of apples and pears. Akad. Nauk. SSR. Dok. 73: 601-604, July 21, 1950.
511 P444A

Translation 28
Growth Substances,
Translated by R. Dembo.

PRESENTED BY THE ACADEMICIAN N. A. MAXIMOV ON MAY 27, 1950.

As it is well known, the preharvest drop of kernel fruit reaches often considerable number. The fruit drop is preceded by the formation of a separate layer at the base of the fruit stem. According to a survey of IU. V. Rakitin (4) the formation of a separate layer occurs as the result of weakening of the supply of nourishing substances and transformation within the separated organ. As a result of such transformation within the fruit as well as in the fruit stem, the process of synthesis weakens and the disintegration process intensifies. During this process the impoverishment of the fruit occurs by an exchange of auksin (5). The stimulating substances penetrating into the fruit stems stimulate in them the exchange process (4), as a result of which, the supply of food into the fruit stems increases, the processes of synthesis becomes stronger than the disintegration process and the formation of a separated layer is checked.

All the works which were published along this problem indicate the considerable effectiveness of the application of synthetic stimulants as a measure of controlling preharvest fruit drop (1-4,6).

In this article we try to indicate the results of a survey of the practical application of a compound alpha-naphthol acetic acid (ANU) in order to decrease the preharvest drop of apples and pears. We carried out our experiments in Stalinabad raion of Tadzhik SSR (1948) and in Alushtinsk raion of the Crimean oblast' (1949).

As it is well known, the peculiarity of the continental climate of

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Tadzhikistan is the difference between the temperatures of summer and of winter, of day and night, low humidity, rare clouds in summer and in fall, abundance of sun and insufficient amount of waterfall which occurs mainly in winter and in spring.

We carried out our research in the orchards of the scientific-research institute of fruit-vine growing and of vegetable farming, near Stalinabad. The experiments were carried out on two apple species ("Borovinka," white juice) and upon one kind of pear (Favorite of Klapp). The trees under experiment, age 14-16 years, were approximately similar in the height and development of the crown and in the amount of their fruit. The trees were treated once during the preharvest period. We judged the influence and the duration of the effect of the compound ANU according to the number of fruit drops which were counted daily, starting with the treatment of the trees until a full harvesting. During harvesting, the amount of fruit upon every tree was counted. The number of fruit taken off the tree during harvesting and the general amount of the fruit dropped during the experiment is accepted as the general yield of the tree. The trees were treated with the water solution of the compound ANU at the concentration of 10 mg for one litr with the sprayer of the system "abtomaks," counting 20 litrs of solution for each tree.

In table 1 are given data on the fruit drop during the first ten days and during the entire experimental period.

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Table 1.

The influence of ANU upon the preharvest fruit drop of apples and pears (in percentage from the general amount of fruit on the tree)

Species	Versions in Experiment	Date of treating the tree	Date of Harvest	No.of Days from treatment to registration	The amount of fruit drop in percentage.	
					10 days after start of treatment	during the entire period
Apples						
"Borovinka"	Control	July 11	Aug. 2	22	39,4	76,7
	ANU				10,6	55,7
White Juice	Control		Aug. 2	21	46,8	84,8
	ANU	July 12			36,2	81.8
Pears						
Favorite of Klapp	Control		Aug.25	44	2.7	67.0
	ANU	July 12			0.7	58.1

The data in table 1 indicates that the trees treated with the compound ANU had a considerable decrease in fruit drop.

The effect of ANU was especially manifested with the apple tree "Borovinka," where the difference in fruit drop between control trees and those under experiment during the entire experimental period reached 21 percent, and the percent of preserved fruit increased from 23.3 up to 44.3, almost double. It is necessary to underline that the effect of ANU was more manifested during the first 10 days from the moment of tree treatment. During this period, the difference between fruit drop on control trees and those under experiment equaled 28.8 percent. Analogical regularity, but with less effect, was possible to observe on the tree White juice. As to the pear tree The Favorite of Klapp, the greater effect of the compound ANU was obtained not during the first ten-fifteen days, but afterwards.

During the treatment of apple trees, the maximal effect of the compound coincided with the period of the maximal fruit drop, while the maximal fruit drop on the pear occurred during the decrease effect of this compound.

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On drawingsl and 2 are indicated the data of the degree of fruit drop on the apple tree "Borovinka" and on the pear tree The Favorite of Klapp in percents of the general amount of fruit which occurred on the tree during the day of treatment.

In studying the graphs the drastic fluctuations in the intensity of fruit drop during the experiment are conspicuous. The curves indicate the maximal fruit drop and assist in determining the duration of the effect of the compound used. Thus it has been determined that the effect of the compound ANU (see drawing 1) varies in its duration on the apple tree and on the pear tree (see drawing 2): On the apple tree the effect of ANU lasted from July 14 to 25 (11 days), on the pear tree, from July 14 to August 20 (37 days).

The obtained results of the experiments in applying the compound ANU indicate the possibility of utilizing it in fruit growing in Tadzhikistan as a control measure against pre-harvest fruit drop.

We carried out experiments in Crimea, in the orchards of the collective farm "To the Memory of Il'ich", Alushtinsk raion, in 1949. For experiments were taken six apple species and five pear species. The trees were selected comparatively equal in their appearance and in their age. The treatment of the trees was carried out for 10-25 days before the harvesting by the water solution of ANU at the concentration of 10 mg for one litr counting 20 litrs for a tree. The experiment was carried out in triple repetition (three control and three under experiment of each species).

The technique of registering the fruit drops was as follows: Upon each tree three branches, with 100-150 fruits each, were isolated. Before the treatment the number of the fruit upon the branch were registered. The first registration of the fruit drops was done ten days after the experiment, the second, during the harvesting.

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Table 2.

The influence of ANU on the pre-harvest drop of apples and pears.

Species	Experiment Variations	Date of Treatment of Trees	Date of Harvesting	No.of days treatment before registration	Amount of Fruit Drops. After 10 days	Amount of Fruit Drops. during the entire experiment
Apple tree						
Napoleon	Control		Sept. 5	24	26.5	49.3
	ANU	Aug.12			11.6	33.4
Rozmarin	Control		Sept. 1	10	-	12.4
	ANU	Aug.22			-	4.1
Renet champagn	Control		Sept. 12	16	13.3	14.8
	ANU	Aug.27			4.4	5.2
Calvil king	Control		Sept. 17	15	11.2	28.2
	ANU	Sept.2			1.3	20.9
Sary-Sinap	Control		Sept.23	17	4.9	22.7
	ANU	Sept.6			4.5	14.8
Pear tree						
Favorite of Klapp	Control		Aug. 4	22	7.9	58.2
	ANU	July 13			2.2	23.4
Bere Bosk	Control		Aug.31	13	-	75.8
	ANU	Aug.18			-	50.8
Williams	Control		Sept.17	15	11.3	23.9
	ANU	Sept.2			8.2	18.7
Bere Ardanpon	Control		Sept.23	17	4.0	13.2
	ANU	Sept.6			1.2	7.3
Winter Dekanka	Control		Sept.23	15	1.8	4.0
	ANU	Sept.8			0.0	1.2

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In table 2 are given the results of the experiments where the fruit drops are expressed in percentage of the total amount of fruit which were on the branches at the beginning of the experiment.

Data on the registration of fruit drop during the entire experimental period (See table 2) indicates that with the assistance of the compound AHU the decrease of fruit drop with a series of apple species and with all pear species could be achieved. The best results were manifested upon the apple species Napoleon (decrease of drops up to 15.9 percent) and with the pear The Favorite of Klapp (decrease of 34.8 percent.)

In our experiments with the apples Napoleon, Renet champagn and Sary-Sinap but the effect duration lasted over 10 days,/with the apple Kal'vil' king it's effect dropped considerably after 10 days. With all pear species the duration of the effect of the compound AHU exceeds 10 days. In this respect the result of the experiments in Crimea comply with the ones carried out in Tadzhikistan.

In summing up the above, we may conclude that the compound AHU could be successfully applied as the control measure against drop of apples and pears under the conditions of Crimea and Tadzhikistan.

Timiriazev Institute of Plant Physiology of the Academy of Sciences USSR.

Entered May 27, 1950.

Quoted Literature.

1. V. A. Popov, N. A. Popov and L.I. Sergeev. Rostovye veshchestva i ikh primenenie. (Growing substances and their application) Krimean Publishers, 1948.

Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

2. IU. V. Rakitin, Primenenie rostovykh veshchestv v rastenievodstve. (The application of growing substances in plant cultivation.) M., 1947.

3. IU. V. Rakitin. Vestnik AN USSR, No. 7, 49 (1948).

4. IU. V. Rakitin. Kratkaia instrukciia po primeneniiu al'fa-naftiluksusnoi kisloty dlia bor'by s preduborochnym opadeniem plodov u iablon' i grush, (A short instruction on the application of alpha-naphtol acetic acid in controlling the pre-harvest fruit drops of apples and pears) M., 1949.

5. IU. V. Rakitin and Z. G. Kreidlina. Ref. rabot uchr. Otd. biol. nauk AN USSR za 19411943, Izd. AN SSR, 1945, str. 91, (Works of the Division of Biological Sciences of the Academy of Sciences of USSR for 1941-1943, Publications of the Academy of Sciences of USSR, 1945, page 91.)

6. I. I. Tumanov. Rostovye veshchestva. (Growing substances) M., 1947.

7. R. KH. Turetskaia, Ukazaniia po primeneniiu rostovykh veshchestv pri cherenkovanii smorodiny, kryzhovnika, vishni, slivy i vinograda M., (Instructions in applying growing substances by grafting currants, gooseberry, cherries, plums and grapes). 1948.

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End of Article

Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

2. IU. V. Rakitin, Primenenie rostovykh veshchestv v rastenievodstve. (The application of growing substances in plant cultivation.) M., 1947.

3. IU. V. Rakitin. Vestnik AN USSR, No. 7, 49 (1948).

4. IU. V. Rakitin. Kratkaia instrukciia po primeneniiu al'fa-naftiluksusnoi kisloty dlia bor'by s preduborochnym opadeniem plodov u iablon' i grush, (A short instruction on the application of alpha-naphtol acetic acid in controlling the pre-harvest fruit drops of apples and pears) M., 1949.

5. IU. V. Rakitin and Z. G. Kreidlina. Ref. rabot uchr. Otd. biol. nauk AN USSR za 19411943, Izd. AN SSR, 1945, str. 91, (Works of the Division of Biological Sciences of the Academy of Sciences of USSR for 1941-1943, Publications of the Academy of Sciences of USSR, 1945, page 91.)

6. I. I. Tumanov. Rostovye veshchestva. (Growing substances) M., 1947.

7. R. KH. Turetskaia, Ukazaniia po primeneniiu rostovykh veshchestv pri cherenkovanii smorodiny, kryzhovnika, vishni, slivy i vinograda M., (Instructions in applying growing substances by grafting currants, gooseberry, cherries, plums and grapes). 1948.

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Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

U.S.S.R. Tsentral'noe Upravlenie Narodno-khoziaistvennogo Ucheta Sortovye posevy SSR, 1938, Statisticheskii spravochnik. (Varietal Plantings of USSR, 1938. Statistical reference handbook) Moscow, 1939. 295 p.

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Semushina, M.N., and Spangenberg, G.E. Registration of the diseases of grain cereals. Vsesoiuzn.Gosud.Ob'edinenie po Bor'be s Vred.i Bolezniami v Sel'sk. i Lesn.Khoz.Sekt.Sluzhby Ucheta. Instr.dlia Mabliud.Punkt. 2, 61 p. 1933. 464.9 V96.

Transl. 31, Plant Protection.

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ORGANIZATION, PROGRAM AND METHOD OF WORK AT OBSERVATION POINT (P. 23-34, in part)

1. The work of an observation point consists of three sections:

   1) Periodical field trips.

   2) Observations made every ten days, and

   3) Simultaneous recording.

1. PERIODICAL FIELD TRIPS (p. 24-29)

Paragraph 2. Periodical field trips aim at establishing the period and conditions of the first appearance or mass development of diseases and offer the opportunity to signalize and provide short-term prognoses.

31

Observations made every ten days are directed towards establishing the nature of diseases and to provide primarily short term prognoses. Simultaneous recordings have as their main object the establishment of the economic significance of diseases and the efficacy of their control, wherever the latter is applied. The combination of all three sections serves the two remaining tasks of the Record Service, i.e., to provide long-term prognosis and establish it's influence upon the development of diseases under natural and industrial conditions.

Paragraph 3. Field trips are made by the observer throughout the entire vegetation period; usually every ten days and in some instances more frequently. While on a field trip the observer notes the first symptoms of all diseases, records the date, conditions under which they occurred and the approximate percentage of development; he also collects specimens of discovered diseases.

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In order to use the proper routes on regular field trips and not to miss the first appearance of any disease, conditions under which they are likely to appear are noted below, as well as the period when they may be expected.

The observer is also given instructions when to record the development of cereal crops and when more frequent trips should be undertaken.

Paragraph 4. Destruction of Winter Grains.

Field trips to establish the period of fungi appearance, leading to the destruction of winter crops, should begin in early spring. Beginning with that time the observer should examine winter crops every 2-3 days in order to note closely the date of the first appearance of fungi.

For [Usarium novale Ces,] it is essential to record the appearance of grey or pink film of mycelium, and in the case of [Sclerotinia Elenev], the date of the appearance of the mycelium film. The observer should look for the first sign of these stages in both fungi in fields distributed in valleys, places where snowfall was particularly heavy and where an ice crust had formed. Conditions under which initial symptoms of rot appear are heavily fertilized fields and early plantings, where winter crops had an opportunity to tiller well since fall. Fungi should be expected on all low lands, boundaries and near shrubs, within the limits of one field, i.e., in places where snow lasts longer and water is retained. In all these places the first traces of mycelium should be looked for at all boundaries of thawing snows. Upon establishing the presence of winter crops and the nature of their destruction, the observer notes on his succeeding field trips the growth of the crops and records their condition on a card: "Notes of observer f. No. B/2" and ends his observations when he records the destruction of winter crops.

Paragraph 5. Lodging of grain.

Lodging, resulting from conditions under which a crop develops and the

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specific meteorological conditions should be recorded concerning all grain; lodging from these causes must be expected on heavily fertilized soils, rich in nitrogen, and among dense plantings. Lodging caused by parasitic fungi is recorded only in the case of rye and wheat. It is most frequently observed on heavy and cold soils, under conditions of high humidity. Both types of lodging may be observed at the start of the blooming period.

Paragraph 4. Smut.

To record the first appearance of smut is not necessary, since its appearance is connected with tillering or the development of the panicle. The observer notes on his trips only the date of the beginning and end of planting of every crop and the presence of smut on plantings. The former is necessary to make the prognosis of the infestation of plantings by smut; the observer should record the date of planting at his own farm and throughout the region. This data is recorded on his card which is immediately forwarded to his supervisory unit following the end of planting.

The presence of smut is recorded in order to supply the information in instances of mass development prior to setting up records on smut. This is particularly important in the case of species developing substantially only in individual years (stinky and stem smuts of rye), as well as in the case of species for which the organization of control takes considerable preparation (loose smut of wheat and barley, especially on winter crops).

Paragraph 7. Ergot.

Observations made during field trips on ergot are necessary only in the case of rye; summer plantings of rye are observed separately from winter crops. The first symptoms of the disease should be noted during the blooming period, when the development of "honey dew" takes place; this should be looked for on

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boundaries of planted fields, ditches, and roads, in plantings retarded in growth, on varieties of later and prolonged bloom, on late plantings which delay the growth and development of plants (specifically "solontzy"). The observer must at such time look for "honey dew", record the date and conditions under which it appeared, and where its development is strongest, survey all plantings of rye and make an eye estimate of its spread on each field guided by the following scale:

Scale No. 1 for estimating "honey dew":

0 - None present in the field.

1 - Single stalks covered by the dew; found seldom and only in separate plots, on boundaries or foci in the center of plantings.

2 - Stalks with dew found frequently but only in separate sections of the field.

3 - Stalks with dew very frequent and all over planted fields.

In estimating the presence of "honey dew" for every planting, its spread in hectares is recorded and whenever the outbreak is severe, this should be immediately reported (by telephone or telegraph) to the local [illegible]YS and FUSU.

Paragraph 8. Spottiness of Stalks and Panicles make their appearance in the relatively brief period of grain ripening and are, as a rule, seldom found. The object of field trips is therefore not to record the dates and conditions under which they first appear but merely to note their presence or absence. These diseases should be looked for from the period of milky ripening of cereals, and in the case of individual diseases of this group, attention must be drawn to the following:

Helminthosporiose of barley should be first looked for on those plantings where striped spottiness of vegetative organs of this crop is observed. Since this disease may appear only on grains, it is necessary in examining plantings during

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the period of milky ripening to open scales and observe the grain; beginning with the period of waxy ripening to also manipulate stalks by hand to examine the grain.

Anthracnose of all cereal crops should be looked for not only in places where the disease was observed on vegetative organs, i.e., directly on spikelets more frequently affected than vegetative organs. Since conditions contributing to the development of these diseases are not known, all these plantings must be surveyed with equal care.

Bacterial Spot should also be looked for in plantings; here the scales must be examined carefully and spikelets and panicles threshed, since without it, it is not possible to discover such diseases as internal bacterium of scales, bacterium of grains and splitting of grain.

Mold of Spikes and Panicles. The first appearance of conidial stages of fungi and bag stage should be recorded for discovery of [Fusarium rostratum (Ciberella Saubinetii). The latter is essential since it will offer the opportunity to segregate this species from other species of Fusarium not causing symptoms of "drunken bread". These diseases usually appear on spikes at the start of waxy ripening. Their first appearance should be looked for in places of increased humidity, dense plantings, and among late ripening varieties which remain in the fields for a long time. The bag stage, F. rostratum, should be looked for by the observer in places where he noted injured spikes.

Field trips undertaken every ten days to record these diseases are usually terminated simultaneously with grain harvesting, but if the grain is not immediately removed from the fields, the observer should continue making his trips even after harvesting is over.

In examining the sheaths he records the presence of fungi of the genera Fusarium or Cladosporium on spikes or panicles and in cases of severe develop-

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ment of molds records their quantity prior to the removal of grain from the fields.

Paragraph 10. Rust, Film and Spot of Vegetative Organs.

Since the majority of these diseases of this crop appear very early, observations should be conducted from the time of germination; on summer crops in early spring, on winter crops in the fall.

The observer must in any event detect the first appearance of the disease, record the date and circumstances under which he first discovered them. The conditions contributing to the development of the diseases of this group have not sufficiently been studied; reference to conditions under which one may expect to discover first symptoms may therefore be made only with respect to those diseases which have been more or less established.

Rust. The determination of the first appearance of rust on cereal crops is made only with regard to the uredo-stage. In addition, the observer notes the host plants of rust and records the date of the first appearance of aecidial stages on them.

The first symptoms of rust on spring crops which have winter forms, should be looked for on fields distributed close to winter crop plantings. Self-sowing must be considered in this connection and noted in any event. On crops not having winter forms (oats), rust should be looked for on fields adjoining its plant hosts. The proximity of plant hosts as foci of initial infection, is significant for other crops as well (rye, wheat and particularly barley), although it is of lesser importance in their case than the proximity of corresponding winter crops. On winter crop plantings the first symptoms of rust should in the fall be looked for on fields adjoining spring crops, and in the spring, especially in places where during the winter there had been a heavy snow cover. Here rust winters with particular comfort in tissues of plants in the form of

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mycelium producing fruits already in early spring.

With regard to ecological conditions, first symptoms of rust must be expected in the north under conditions of lower humidity, in the central zone under conditions of average humidity, and in the south under conditions of high humidity of the air.

Mildew. The first appearance of mycelium and the conidial fruitbearing (which usually develops first in places of high humidity and poor aeration), in low lands, dense and lodging plantings.

Ascochyta and Septoria. The first symptoms of these diseases should be looked for in conditions of low humidity, on the most elevated parts of fields, and hills.

Striped Spottiness. The first symptoms should be looked for on early plantings and places of high humidity.

Bacterium on foliage and stems may appear rather early. Ecological conditions contributing to the development of bacterium are manifold and not sufficiently studied; it is therefore necessary to search for the first symptoms of the disease among ecological conditions.

End of Section.

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Growth substances as a possible means of controlling the drop of cotton bolls. Akad. Nauk SSSR. Dok. 59:1665-1668, March 21, 1948.
511 P444A

Transl. 32: Growth Substances

Translated from the Russian by S. N. Monson.

IU. V. RAKITIN AND K. E. OVCHAROV

GROWTH SUBSTANCES AS A POSSIBLE MEANS OF CONTROLLING THE DROP OF COTTON BOLLS

(Submitted by the academician N. A. Maksimov, January 24, 1948.)

Synthetic growth substances find application in various fields of plant industry. They are used to stimulate root formation, obtain seedless fruits, prevent drop of flowers, fruits and foliage, retard growth, and in various other instances.

Proceeding from facts testifying to the capacity of growth substances to retard the formation of the removable layer, we decided to establish the opportunities for using the above preparations to control drop of cotton bolls. According to data of many researchers (14-19), drop of cotton bolls is reaching large proportions and causing considerable damage to our cotton industry. The development of control measures are consequently of considerable economic significance.

We began our research in this direction several years ago. At first we dealt with plants growing in hothouses; then transferred to experiments made under field conditions. This paper describes the results of our investigations, conducted in 1947 on a field plot of Kirov collective farm, Railroad region, Stalinabad oblast', Tadzhik SSR.

We began our work at Tadzhikkistan with tests which aimed at determining the influence of growth paste (lanolin plus growth substance or of a variety of several growth substances) upon drop of buds, flowers and bolls. In making these experiments we proceeded from the fact that the formation of the removable layer is the result of loss of auxin in dropping organs and that

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auxin, essential for fruit growth is supplied by (forming) seeds (2,20-22).

Experiments made on buds and opening flowers consisted in treating the test variant with paste and the control with pure lanolin. Paste and lanolin were applied to the wounded surface, resulting from the cutting of stems. Two similar variants (1 - paste, 2 - lanolin) were used in tests with cotton bolls of 6-day growth. Bolls were treated after all seed germs had been removed from them. In order to conveniently remove seed germs, the tops of cotton bolls were cut off. Chambers forming as a result of the removal of seed germs were filled with either paste (1st variant) or lanolin (2nd variant). The cut tops were then replaced.

Subsequent observations established that the conduct of fruit elements varied radically, depending upon whether they were treated with pure lanolin or paste. Fruit elements treated with pure lanolin relatively soon produced wilt, turned yellow and then dropped. It is to be noted that common drop of fruit elements occurs under similar changes. Fruit elements treated with growth paste acted altogether different. They remained turgescent, green and kept much better on the plants. Our observations also showed that various fruit elements treated with growth paste remained on the plant in different degrees; thus flowers and bolls were retained much better than buds.

The results of our observations on the above tests are presented in table 1.

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Table 1.

INFLUENCE OF GROWTH PASTE UPON THE DROP OF COTTON BOLLS, FLOWERS AND BUDS OF THE COTTON VARIETY 103 F.

Variants	Number of drops of fruit elements after 30 days (from a total number of 10 of each fruit element)			Remarks
	Cotton bolls	Flowers	Buds	
Control	9	7	10	
2,4-DU -0.1 percent	3	2	5	2,4-DU= 2,4-dichlorophenoxyacetic acid
VNU-0.1 percent	2	2	8	VNU = Naphthoxyacetic acid
ANU-0.1 percent	2	2	6	ANU = Naphthylacetic acid
Mixture of substances:				
2,4-DU - 0.025 percent				
2,4-DN - 0.025 percent				
VNU - 0.025 percent				
ANU - 0.025 percent	3	4	5	2,4-DN = 2,4 dichlorophenoxybutyric acid.

The above experiments confirmed the previously established fact that by treating fruit elements of cotton with growth substances it is possible to reduce their drop. Having secured this information in experiments with growth paste, we transferred to tests of treating plants with liquid solutions of the above preparations.

The first series of experiments were started on August 3rd. At that time shrubs already had a sufficient number of young cotton bolls (20 to a shrub) which, if allowed to reach full maturity, would ensure a good yield. One hundred plants were taken for each variant. Different preparations of growth substances were tested in different concentrations. Plants were sprayed in the evening with a manual atomizer. All parts of a plant were sprayed in the manner done with liquid fungicides. Control plants were sprayed with water.

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Best results were obtained from those variants where growth plants were applied in relatively weak concentrations. Date concerning these variants are presented in table 2.

Table 2.

INFLUENCE OF GROWTH SUBSTANCES UPON DROP OF COTTON BOLLS 108F

Variants	100 plants in each variant; initial No. of germinated balls on 8-3-47	treatment given Aug.3-13	Aug.3,1947 8-13, 9-22	total from 8-3-9-22	percent of initial No. of bolls	No.of bolls remaining on plants by 9-22
Control	2313	413	706	1119	48.4	1194
VIIU-0,001 percent	1730	250	38	288	16.6	1442
2,4-DM-0, 001 percent	1872	286	85	371	19.8	1501
Mixture of Substances:						
2,4-DM-0,0005 percent						
2,4-DU-0,0005 percent	2446	423	43	466	19.3	1980
VIIU-0,0001 percent						
ANU-0,0001 percent	2050	100	280	380	18.5	1670

Analogous data was obtained in succeeding tests made towards the end of August. In these tests growth substances were applied in lower concentrations, while plants were treated several times (August 30,31; September 1, 5 and 10). The results of these tests are presented in table 3.

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Table 3.

INFLUENCE OF GROWTH SUBSTANCES UPON DROP OF COTTON BOLLS 108F
(100 plants in every variant)

Variant	Initial No. of Cotton bolls	8-30-9-6	9-6-14	9-14-25	Total from 8-30 to 9-25	in percent to initial No.of bolls	No.of cotton bolls that remained on plants by 9-25
Control	2960	460	420	90	970	32.8	1990
INU 0.0005%	2890	330	410	0	740	25.6	2150
ANU 0.0001%	2880	130	300	0	430	14.9	2450
ANU 0.0005%	2800	140	300	0	440	15.7	2360
Mixture of Substances: 2,4-DN-0.000 per cent							
2,4 DU-0.0005 per cent	2860	130	510	0	640	22.4	2220
Mixture of Substances:							
VNU-0.0005 percent							
ANU-0.0005 percent	2990	230	430	60	720	24.1	2250

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Our experiments indicate that cotton treated with growth substances produces a visible reduction in cotton boll drop. It may be added that as shown in results of the first picking, cotton bolls which developed on treated plants did not differ in their content of raw cotton from those of control plants.

Thus synthetic growth substances may be regarded as one of the promising means for increasing cotton yields.

In engaging in other experiments it is necessary to bear in mind that dosages of growth substances, favorable to prevent cotton boll drop, may react negatively in the case of other fruit elements. With regard to buds, they may cause their destruction. Opened flowers may under the influence of these dosages form fewer seeds and even seedless bolls; in the first case the content of fiber in cotton bolls will be reduced, in the second there will be no fiber at all. It follows that treatment must be applied during the period when plants have already accumulated a sufficient amount of cotton bolls.

E. K. Nizkovskaia participated in the tests described in this article.

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Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

REFERENCE LITERATURE:

1. N.A. Maksimov, Successes in Contemporary Biology,22, No. 2(5) (1946)

2. IU.V. Rakitin, Application of Growth Substances in Plant Industry. M., 1947

3. M. Kh. Chailakhian and R. Kh. Turetskaia, Brief Methodical Remarks on the Application of Synthetic Growth Substances, publ. by AN. SSRR, 1942.

4. N.A. Maksimov, and R. Kh. Turetskaia, Application of heteroauxine and other synthetic substances for speeding the growth of grafts. Publ. by An. USSR,1947.

5. D.A. Komissarov, Application of growth substances in vegetative propagation of woody plants by grafting, L., 1946.

6. I.E. Kocherzhenko, Application of growth powder in grafting geranium., 1946.

7. N.G. Tarasenko, Growing fruit-berry seed stock with growth substances (green grafting) 1946.

8. A.S. Sereiskii, Jour. Inst. of Botany AN USSR, No. 22,377 (1939)

9. IU.V. Rakitin and A.V. Krylov, Application of growth substances upon to tomato crops, 1947.

Transl. 6-27-51

10. I.I. Tumanov, S.G. Enikeev, et al. Sov. Agronomy, No. 7,25 (1946)

11. F.E. Denny, Contr. Boyce Thomps. Inst., 14 (1), 15 (1945)

12. A.E. Hitchcock, and P.W. Zimmerman, Proc. Am. Soc. Hort. Sci., 42,141 (1943).

13. F.E. Gardner, P.C. Marth and L.P. Batjer, Science, 90, No. 2331, 208 (1939).

14. G.S. Zaitsev, Blooming, fruit formation and opening of cotton bolls; 1919.

15. A.P. Makarov, Trudy Akkavak Experiment Irrigation Station (issue 3)

16. N.A. Moskvin, Cotton Business Nos. 6-8 (1926)

17. A.V. Blagoveshchenskii et al. Isv. Central Asiat. Gov. University, series 8-V, v.10 (1929)

18. V.A. Novikov, Trudy Inst. Plant Physiology im. K.A. Timiriazev, 2 No.1 (1937)

19. T.L. Ivanovskaia, Dokl. All Union Confer. on Plant Physiology, [1, 38 (1946)

20. IU.V. Rakitin, Sovr. Agronomia, No. 10, 54 (1946)

21. IU.V. Rakitin et al. Papers of Institutions of Depts. of Biol.Sc. AN USSR (1941-43) 1945, p. 91.

22. IU. V. Rakitin et al. Papers of sc. res. for 1945, Dept. of Biol.Sc. AN USSR 1947, p. 49.

Photoprint of Reference Literature is attached to ribbon copy.

Declassified in Part - Sanitized Copy Approved for Release 2013/03/27 : CIA-RDP80R01426R009800140001-2

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Maksimovich, N. N.
To Intensify the Work of Selection and Propagating Canker-Resistant Potato Varieties
Sad i Ogorod 1948(3):59-62. Mar. 1948. 80 Sal3

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Translated from the Russian by
S. N. Monson

According to data available in our literature, there are available close to 400 canker-resistant potato varieties, although far from all are valuable with respect to actual resistance to canker and economic characteristics.

Based on experiments made under diverse conditions prevailing in the Soviet Union, the following varieties were selected from a large number of varieties (about 300) as most adapted to our conditions: Jubel, Majestic, Great Scott, Kalev, Kungla, Courier, Berlichingen, Cobbler, Parnassia, Paul Wagner, Aberdeen Favorite, Phytophthora-Resistant, and Imandra.

Considering the vast diversity of natural environmental conditions in our country, this number is far from adequate. There is a particular lack of early canker-resistant varieties essential for the north-western and northern oblasts of the country. Of these there are only two: Cobbler and Courier, both susceptible to phytophthora and other diseases, of poor keeping quality, Cobbler in particular.

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Among foreign canker-resistant varieties now under test at the GOSSET', the best, according to available data, are: Fruhbote, Arran-Crest, Ballydoon, Dun pearl, Dunstar, Albabona, Erdgold.

The principal characteristics aimed for in newly developed varieties, aside from canker-resistance, should be: high yield, early maturing, and resistance to other diseases, primarily phytophthora and ring rot.

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For purposes of selection for canker resistance a large choice of initial material is available among cultivated varieties, as well as South American species and forms of wild potatoes. Many of the cultivated varieties have been thoroughly studied as breeding stock. Thus it is known that Jubel, for instance, transmits its resistance to canker to its progeny. Other good breeders in this respect are Pepo, Parnassia, Courier, Lokh, etc. A large percentage of canker-resistant hybrids is obtained in crossing canker-resistant varieties with the following non-canker-resistant varieties: Alma, Centifolia, Bismark, Industry.

Many forms of South American potato varieties are known that possess resistance to canker. They are: Koline, Leptostigma, Boyacense, many forms of the species Andigena, etc.

The presence of forms resistant to canker among South American potatoes is of particular importance since it permits the obtaining of varieties which combine canker resistance with an equal resistance to other disease (phytophthora, etc.). Our experiments indicate that a similar combination of characteristics is possible: the variety Phytophthora-Resistant is also resistant to canker. The inter-species hybrids Nos. 3942, seedlings 43, 998 and 986 are resistant to phytophthora and judging from preliminary data, do not succumb to canker. Many hybrids resistant to canker proved early maturing (Nos. 390, 4669, 1002, 1946) and produce yields equalling those of the variety Lorkh.

Judging from all available data one may venture the belief that selection for canker resistance will not present any difficulty. The Institute of Potato Industry and its zonal stations have devoted considerable attention

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to the problem in the past years. The proportion of combinations in crossings with the participation of one or both canker-resistant parents increases from year to year and in 1947 was brought up to 85 per cent. The number of hybrids originating from canker-resistant parents was fairly large in the past four years (75-72 per cent). The Institute of Plant Industry and its stations have in post-war years forwarded to the Central Anti-Canker Laboratory 121 seedlings for canker testing, of which so far 37 hybrids have proved uninfected by the disease (30.6 per cent).

To produce new canker-resistant varieties as speedily as possible, methods for the accelerated propagation of the most valuable hybrids have to be widely applied to ensure a sufficient amount of tuber material for simultaneous experimentation at different selection nurseries.

In testing for canker resistance it is necessary to select specimens of those hybrids that have already passed the rejection stage and been considered potential varieties because of their economic qualities.

Our procedure in canker resistance tests calls for the selection of hybrids in the third or fourth year of work on them. It is imperative that the evaluation of canker-resistant varieties be speeded up at Government network stations (Gosset') and that conclusions covering a 3 to 4 year period be reached sooner.

The Institute considers that the number of canker-resistant varieties in regionalization should be immediately increased by utilizing the superior varieties approved by the Gosset'.

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The approval data indicates that sowings of canker-resistant varieties represent no more than 1 to 1.5 per cent of all varietal sowings of the Union. Their number is equally small in canker-danger areas, where they are no higher than 2 per cent.

The most widely distributed canker-resistant varieties are: Berlichingen, Parnassia, Jubel, Courier and Cobbler. The rest are not widely distributed and occupy relatively small areas.

In order to increase the seed fund of canker-resistant varieties it is necessary to organize the production of elite seeds on as large a scale as possible in each oblast, accepting the proportion of one hectare of elite sowings to no more than 3 to 5 thousand hectares of total potato sowings. It is further essential to increase the proportion of canker resistant varieties in elite sowings, bringing it up to 100 per cent at experiment institutions in canker-infected areas.

It is further important to widen the seed growing net work, at least temporarily, by utilizing all stations of the Gosset' in canker infected areas for the propagation of those canker-resistant varieties selected in tests. This will speed up considerably the flow of valuable canker-resistant varieties into production. The network of seed nurseries should be extended with the view of establishing separate seed nurseries for each region by 1948. Schedules for the reproduction of canker-resistant varieties should be issued on the basis of approximately one hectare to 300 to 500 hectares of the total sowing area.

Upon obtaining this quantity of seed material in 1948, it will be possible to plant in 1949 an entire seed plot with tubers of a given variety

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by using the simplest methods of speedy propagation that give a 20-fold increase and by 1950 to plant the entire sowing area with potatoes.

The total area of seed plots in the oblasts of the canker danger zone amounts to 200 thousand hectares (20 per cent of 1 million hectares of the total potato area of this zone.).

In accepting as a norm the provision of seeds of canker-resistant varieties at 100 kg. per hectare, approximately 20 thousand tons will be required for all seeds plots in the canker danger zone.

Tentative estimates indicate that the problem of transferring canker-resistant varieties in oblasts of the canker danger zone could be solved in the period specified by the government. The following measures should be undertaken for the purpose:

1. Estimate, preparation and distribution of seed material of canker-resistant varieties to collective farms;
2. Application on a wide scale of methods for accelerated propagation of tubers of canker-resistant varieties at collective and state farms, which would permit the obtaining of a coefficient of increase no lower than 20 in the first year of planting and no lower than 10 in the second.
3. Consultations and seminars to be introduced in all oblasts and republics of the canker danger zone to deal with the problem of accelerated propagation of canker resistant varieties. The chief agronomists of all regions of the oblast should be drawn into these discussions, along with regional agronomists, specialists of experiment stations, and the leading workers from collective and state farms.

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The participants of oblast seminars should, together with the personnel of local experiment institutions, conduct regional seminars for the benefit of responsible farmers of all collective and state farms of the region (presidents of kolkhoz, directors of state farms, agronomists, brigade leaders). It is essential to arrange immediately for the publication of handbooks and literature on the subject of accelerated propagation of canker-resistant varieties on a mass scale (posters, pamphlets, instruction-leaflets).

The Institute of Potato Industry proposes the following methods for accelerated potato propagation:

1. Cutting tubers in sections (according to number of eyes);
2. Division of clumps;
3. Utilization of etiolated sprouts as seed material, especially grown in corresponding conditions; these methods are fully accessible to any collective or state farm and do not require the presence of a covered frame or special care ("snashchenie").

These methods may be applied separately or collectively in a consecutive order, i.e., etiolated sprouts are obtained from tubers that are intended to be speedily propagated, broken off and rooted up to the seedling stage. The tubers are vernalized in the light and then cut according to the number of eyes. The division of clumps is done on sprouts from planted parts.

By cutting tubers it is possible to obtain 5 to 10 plants from one tuber and bring the coefficient of increase up to 15 to 20. In dividing clumps, the number of plants from one tuber may be doubled and even tripled, thus correspondingly increasing the coefficient of increase to 30 and over. The production

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of seedlings from etiolated sprouts will provide additional 4 to 6 plants from each tuber, bringing the coefficient of increase up to 50 and higher.

In selecting the particular method for speedy propagation local conditions have to be considered (climate and soil). In many regions of raw climate the cutting of tubers may contribute to the spread of disease. In those instances it is feasible to substitute sprouts obtained from tubers planted in rows or cold frames.

The primary conditions for the successful application of the described methods designed to speed propagation are: 1. Utilization of completely healthy, large tubers weighing 50 g. and over. Sprouts and parts of these tubers produce a higher yield than do small tubers.

2. Compulsory vernalization of tubers in the light, for a period of 10 to 12 days prior to cutting. This method accelerates rooting and germination and thus prevents losses from decay.

3. Utilization of etiolated (not light) sprouts. They are faster and root better.

4. Compulsory additional growth of etiolated sprouts in the field and in cold frames up to the seedling stage. This practically eliminated the destruction of sprouts.

This method provided us with 92 per cent of germinated plants, while when transplanted into the ground the loss amounted to 30 - 50 per cent.

5. Cut parts of tubers should be planted at a distance of 20-25 cm. and further apart than usual, to a depth of 2-3 cm., into soil well

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cultivated and warmed.

6. Division of clumps should be undertaken on young plants, prior to budding.

7. Finally, a primary condition for speedy propagation is a high agricultural technique and good care. The plot should also be highly fertile and close to watersheds.

Prior to planting, manure in the proportion of 30 tons per hectare should be introduced, the soil deeply cultivated and made friable, and good care ensured throughout the summer by weeding and harrowing, etc.

The proposed methods designed to accelerate propagation have been tested under conditions of production in propagating tubers of the varieties Phytophthora-Resistant, Berlichingen and others.

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Chailakhian, M. KH. Transl. 35: Growth Substances.
Nature of substances which accelerate and retard the blossoming of plants, and the theory of Klebs. Uspekhi Sovremennoi Biol. 26: 515-530. July/Aug.1948. 442.8 Er3.

Translated from the Russian by R. Dembo.

In the physiology of plants during many years the theory of Klebs on plant blooming (Klebs, 1904, 1907, 1913a, b, 1918; Klebs, 1906) was widely accepted, but ten years ago, when we discovered the hormone theory of plant blooming (Chailakhian, 1936 b, 1937), numerous factors were presented by our scientists, as well as by foreigners, which could be hardly explained from point of view of Klebs' theory. The road for denunciation of this theory was opened. How was the task to be realized? In order to grasp this it is necessary to recall the basic positions which result from Klebs' works and from his blooming theory.

Klebs' theory of plant blooming and its criticism.

The basic hypotheses which result from the works of Klebs are as follows:

1) The rhythm in the development of the lower and higher plant organisms depends upon the factors of the environment where the dominating role is played by the conditions of food, light (its intensity and quality), soil and air moisture and the fluctuations of temperature.

2) The influence of the factors of the environment is first of all manifested upon the physiological condition of the plant, and only then, upon the morphological changes of the transformed physiological conditions, whereby the entire process of blooming, according to Klebs, is divided into three phases:

   1) The origin of blooming condition.

   2) Formation of the flower organs - buds.

   3) Development of flowers and of inflorescence.

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Klebs'. first two generalizations played an important role not only in determination of correct understanding of those interrelations which originate between the plant and the environment, but also tore out complicated phenomena of plant ontogeny from the clenching hands of vitalism whereby the Pfeffer theories on autonomous development, independent from the environment, and Shimper's theory of compulsory transformation in the growth and rest of plants were most popular.

Not in vain did Kliment Arkad'evich Timiriazev greet the appearance of the fundamental works of Klebs "The Arbitrary Transformation of Plant Forms," translated it himself in 1905 in the Russian language with the famous title "Materials For the Future Physiology of Development" with his footnotes and thereby consolidated the name of Klebs as the pioneer in this domain of science.

The third hypothesis resulting from the works of Klebs is his own blooming theory. Numerous experiments carried out by him with Lobelia Erinus, Veronica chamaedris, Glechoma hederacea and with other plants, especially experiments with Sempervivum Funkii, published already in 1918, indicated that the blooming of these plants is encouraged by dry air, bright light, and, during its decomposition into basic components, by red rays and, finally, by changing temperature conditions, from low to high temperature. All these conditions stimulate simultaneously the photosynthesis of plants, and, consequently, the accumulation of assimilations - sugar; on the other hand, an intensified mineral, especially nitrogen, assists in vegetative growth and checks plant blooming. Hence, the basic idea of Klebs insists that the blooming occurs when in the plant tissues accumulates sugar and it excels nitrogen compounds.

Klebs' theory found immediately many followers and received wide expansion in the United States due to the research of two American scientists Kraus and Kraybill (Kraus and Kraybill, 1918) over tomatoes in which, by regulating the

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amount of sugar in plants by means of light of various intensity and the composition of nitrogen by varied doses during the introduction into the soil, they came to the conclusion that the successful blooming and fertility of tomatoes depends not upon the surplus of sugar nor the surplus of nitrogene compounds, but upon their definite relationship expressed by C/N, where C - sugar prevails over N - nitrogen. The inferences of Kraus and Kraybill impressed at that time the scientific circles of phytophysiologists and agrochemicists, and one of the American physiologists, Nightingale, 1927, wrote that the correlations discovered by Kraus and Kraybill are as important for agrochemical and orchard practice as the structural formulas of substances for Chemistry.

The great practical authority was also siding with Klebs' theory: In orchards and fruit growing, the application of circling the branches or placing upon them a fruit belt was based upon the overflowing of the branch tissues by sugar which caused the acceleration and intensification of fertility; in plant production and in agriculture the application of large doses of nitrogen compounds under plants has been limited, because the rich vegetative plant growth hampered the ripening of crops and caused its decrease.

But already two years after the publication of Klebs' last work the American scientists Garner and Allard discovered in 1920 and 1923, the phenomenon of photo-periodism. In relation to the duration of sun radiation some groups of plants were observed during twenty four hours of a short day, long day and a neutral day with all the changes which bind the ecotypes. A profound study of the phenomenon of photoperiodism furnished gradually such amount of new factors which could not be elucidated from the point of view of Klebs' theory, moreover, which refuted Klebs' theory, that the time arrived to say clearly that this theory of plant blooming is incompetent.

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All this has been discovered in our country (1937) ten years ago based on the following factors:

1) The growth of plants and the accumulation of the dry substance, i.e., the productivity of photosynthesis in all plant species are more intensive during a long day, while the blossoming under these conditions of light regime begins in a long day plant (wheat, lupine, mustard and others) and does not occur in typical short day plants (chrysanthemum, perilla, soy and others).

2) The composition of carbohydrates - sugar in all plants is higher under the conditions of a long day, when the typical plants of a short day don't grow at all, but the plants of a long day bloom. Thereby the correlation of C/N during the period of blooming, according to the surveys of Knodel, 1936, and ours, and also the works of Arthur, Guthrie and Newell, 1930, Kurneedk, 1937, Parker and Borthwick, 1939, in plants of a short day are of the opposite significance than is the Klebs' theory: with plants of a long day the increased correlations S/N coincides with their capacity for blooming and does not influence this process.

3) The circling of plants causes the checking of flow from the circled branches and the accumulation not only of sugar, but blooming regulating substances as well, whereby the origin and the acceleration of blooming of sprouts are caused by the latter, in case specific conditions of light regime are created.

The combination of these basic factors led us to the denunciation of Klebs' theory, and also many other factors obtained as a result of experiments on photoperiodism indicate the necessity of accepting the hormonal explanation of inner causes of plant blooming.

But what should be done with those factors and those phenomena which were observed and collected by such a talented and original explorer like

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Klebs who used them in his theory of blooming; how could we deal with that rule in plant growing which links so well with Klebs' theory? We are now facing the problem of elucidating these facts and phenomena, i.e., of grasping fully Klebs' theory.

During recent years, along with the work on the basic approaches of the hormone theory, we carried out research in two directions:

1) The study of the influence of leaves which hampers the blooming of plants and of the nature of substances which cause the inhibition, and
2) The study of the influence of nitrogen compounds upon plant blooming.

In fall, 1946, the Institute of Plant Physiology of the Academy of Sciences of USSR obtained experimental data by which the chain of exploration carried out in these two directions has been closed. Now we are able to explain the facts and phenomena with which Klebs operated.

The influence of leaves which retards blooming, and the nature of substances which cause retardation.

In the photoperiodism of plants indicated by Garner and Allard the most interesting phenomenon was the discovery of the fact that the photoperiodical effect is equally perceived by the leaves of short day plants and of long day plants (Knott, 1934) (Chailakhian, 1936 a, b; Koshkov, 1936 a, b; Psarev, 1936) A deeper exploration of the mechanism of the photoperiodical reaction led to experiments in which not all the leaves of some plant underwent the differentiated light regime, but only separate leaves in which the methods of grafting were applied. Thus new regularities in the photoperiodical plant reactions were discovered (Chailakhain, 1936 b, 1938 a, 1938 b; Koshkov 1936 b, 1937; Hamner a. Bonner, 1938).

With short day plants, during the seasoning of leaves in a short 10-12 hour period, the sprouts bloom. Also in experiments of 1935-1936 with large

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bloom chrysanthemum and red leaf perilla we observed that the leaves, kept during a long, 16-18 hours day (or during constant light) and which are between short day leaves and sprouts, retard the sprout blossoms. These observations indicate that in the method which we suggest for the study of phlorogenic substances - the plant hormones, and in the method of grafting made for the acceleration of plant blooming and fruit bearing, the basic condition is the removal of long day leaves upon sprouts and grafts which perceive the influence which is derived from short day leaves. The same years similar observations were found by Moshkov (1936 a,b) who also noticed the retarding effect of the long day leaves upon chrysanthemums and who eliminated it either by the removal of leaves, or, in individual cases, by placing them into permanent darkness. Later on Lang and Melchers noticed within long day plants the retarding effect of short day leaves upon the blooming of henbane[Hyoscyamus niger] (Lang and Melchers, 1941; Lang, 1941); upon the blooming of spinach - P. Uisrou, K. Uisrou and Bibel (Withrow, Withrow and Biebel, 1943).

Nevertheless, the nature of this effect of leaves which are under the conditions of unfavorable light regime remained unclear. Therefore, we started experiments with short and long day plants, whose main task was the elucidation of the nature of the effect of leaves and also the nature of substances which retard blooming. These experiments began in 1943 in a small hot house of the State University in Erivan, and in 1944-1946 were carried out on a wider scale in the vegetation house and conservatory of the Institute of the Physiology of Plants of Academy of Sciences of USSR. During these years the development of the basic approaches and the conducting of the experiments did not occur in a regular logical manner, as it is explained here, because individual attempts and searching led to the decisive experiment, but the idea itself was moving along winding roads.

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Among the series of experiments with short day plants which we made (1946 a, 1946 b), the basic object was the red leaf perill (Perilla nankinensis). The plants were cultivated before the beginning of the experiments under the conditions of unfavorable light regime, i.e., during a long day, then they underwent such a formation, that only the upper stem bud and two leaves in uneven position to each other were left. One leaf was left upon the plant during a long day, the other one was kept under the conditions of an artificially shortened day with the assistance of an impenetrable paper case. In the experiments carried out in such a manner, a clear regularity was evident in the blooming of the sprouts in relation to mutual position of the short day and long day leaves: If the upper leaf, closer to the upper stem bud, is exposed to a short day, then there is no retarding effect of the lower long day leaf; if we use the long day leaf against the short day leaf, then a definite retarding in the blooming of the sprout could be observed; in case the long day leaf is higher than the short day leaf, then a drastic retarding occurs. Therefore a special retarding effect of the long day leaf was manifested, if it is growing between the short day leaf and the upper bud. The long day leaf creates here a barrier for a photoperiodic stimulus which moves from the lower short day leaf to the stem summit.

The availability of a barrier, in case it really originates, suggests the direct correlation of the short day and long day leaves, and here immediately arouses the problem: Does the correlation of substances which develop in the long day and short day leaves occur before they reach the stem bud, or do these substances influence the cells of the tissues of the stem bud? What is then the role of the third partner in the system of "long day leaf - short day leaf - stem bud?"

The answer to this question was furnished by the experiments with perilla, during which fragments of the stem with the leaves under the conditions of a

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short or long day underwent a part separation, and also by the experiments of the separation of the main plant stem. It became clear that during the separation of the upper short day leaf in such a degree that it preserved the position of the upper leaf in relation to the long day leaf occurred a retardation in the blooming of the sprout. During the separation of the upper long day leaf, although it preserved its position of the upper leaf in relation to the short day leaf, nevertheless its retarding effect dropped considerably. These experiments with the separation of individual portions of the stem with leaves proved that in the effect upon the stem bud it is not the mutual distribution of the long day and short day leaves, but their relative distance from the upper bud which is of great significance.

The correctness of this conclusion has been confirmed in the experiments with the separation of the main stem of perilla with the alternating position of two leaves. It became evident that with the deep horizontal separation of the stem with any position of the long day and short day leaves, the same effect occurs, the same action of the leaves as without separation. The result of these experiments indicates that with the presence of two leaves on the plant which are under the conditions of various light regime there is no direct interference nor reciprocity in the substances originating from short and long day leaves. In the schematic expression it is not one straight line of the combined effect of the long and short day leaves upon the stem bud, but two straight lines of parallel effect. The substances which develop in both the short and long day leaves move directly into the cells and the tissues of the growing bud and cause here a corresponding effect in the general exchange of substances; the amount of substances, the speed of their entering from the leaves into the cells of the upper bud, the predominance of some substances over others determine the course of the bud development.

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As to the nature of substances which develop in the leaves which are under the conditions of optimal photoperiods, - in this case of short day leaves, we furnished (1937, 1938 b, 1940 a, 1940 b, 1940 c) numerous data which indicate that they are phlorogenic substances, blooming hormones which move from the leaves into the stem buds and which cause such changes in metabolism which result into the initiation of flowering. And although up to recent time, in spite of numerous attempts, the blooming hormones were not separated from the plants and the possibility of their motion through non living environment has not yet been proved, nevertheless, many important factors were found which prove the concept of blooming hormones (Koshkov, 1937; Hamner and Bonner, 1938; Borthwick and Parker, 1938; Gregory and Purvis, 1938; Melchers and Lang, 1941; Harder and Witsch, 1940 and others).

As to the nature of substances which are produced by leaves which are placed under the conditions of unfavorable photoperiods - in this case long day conditions, the assumption that these are special substances which retard blooming seemed plausible and such assumptions existed. Thus Koshkov (1936 a,b) as a result of experiments with chrysanthemums assumed, that in long day leaves are formed substances of vegetative growth which promote the growth of sprouts and the neutralizing effect of bud forming substances. On the other hand, the analysis of phenomena of photoperiodical induction, or of charging, led us to the conclusion (1937) that the phenomenon of the bloom retarding effect of leaves placed in unfavorable photoperiods could not be explained by the formation of such substances;"there is no formation of special function of retarding or of hampering the sexual development in the plants."

At that time it has been assumed that the surplus of plastic substances which are placed under the conditions of a long day affects the bloom retarding of the sprout.

In connection with the manifestation of those regularities which originate

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during the simultaneous effect of long day and short day leaves upon the upper stem bud, we carried out (1945, 1947) special experiments for the solution of the problem of the nature of the substances which are produced in the long day leaves of plants of a short day and which retard their blooming.

The first experiments were carried out with the purpose of elucidating the influence of light of varied intensity upon the long day leaves which cause the bloom retarding and the correlation between the formation of substances from the intensity of photosynthesis. Upon the plants of perilla grown during a long day were left an upper stem bud and two leaves on opposite sides. One of these leaves upon all plants had a short 8 hour day, and the other leaf was left for a long day, but with various plants it received light of varied intensity which was achieved by placing the leaves into paper cases of varied density. In connection with the decrease of light intensity the retarding effect of the long day leaf dropped regularly; it's placing into the case of two layers of writing paper brought the retarding effect to zero, i.e., caused the same effect as in the case if this leaf were removed. It became evident that the bloom retarding effect of the long day leaf is related to the substances whose formation depends directly on photosynthesis.

Such substance is first of all sugar. Therefore, in the first experiments directed towards the elucidation of the nature of substances which retard blooming we introduced sugar solution into the leaves of perilla. The blooming of sprouts present in the leaf axils(after the introduction of 1 percent of glucose) retarded for 4-7 days in comparison with sprouts present in the axils of short day leaves which did not receive any glucose. Thus, in these experiments the concentration of sugar in short day leaves led to the checking of the sprout blooming.

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More conspicuous and quite definite results were obtained in other experiments when the checking effect of the long day leaves was replaced by the effect of sugar introduced from outside. We took perilla plants with the upper stem bud and with two leaves (a long day one and a short day one) with such a distribution that the long day leaf was situated above the short day leaf or opposite it. Within the plants under experiment, the leaves which corresponded to long day leaves in control were removed and their petioles were placed into a 5 percent solution of sucrose poured into short testing tube; after the drop of the petioles, approximately two weeks later, the introduction of sucrose continued through the leaf by means of a glass pipe with a capillarly stretched end. The effect of the long day leaves which retards the blooming has been expressed in control plants quite conspicuously; in case when the long day leaf was located higher, the blooming was retarded for 28 days. Within the plants under experiment, the effect of the long day leaves which checked the blooming was replaced by the bloom checking effect of sucrose which was introduced into the plant through the petiole and the leaf trace - the bloom retarding was only two days shorter than that of control.

Thus, with the short day plants the bloom retarding effect of the long day leaves is based upon the effect of the assimilations sugar produced in these leaves and streaming into the stem buds. These assimilations, produced in large quantity in long day leaves, retard the direct fusion and effect of florogenic substances blossom (hormones) whereby this influence, as we have noticed, depends upon the vicinity of the organs situated upon stem buds which produce assimilations (of long day leaves), and the speed of their fusion into the buds. Thus, sugar in their excess amount are the substances which check the blooming of short day plants.

In a series of experiments with long day plants which we carried out

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(1946a, 1947), we took as objects white mustard (Sinapis alba), spinach (Spinaciaoleracea), radish (Raphanus sativus) and pinewoods (Rudbekia bicolor). Experiments with these plants were carried out in the same direction as with perilla - a short day plant. In the first experiments the nature of the bloom hampering effect of short day leaves was surveyed. For this purpose the plants were cultivated under the conditions of a short ten hour day and then underwent reformation. With stem plants only one stem bud and two leaves were left; with spinach, radish and pinewood which under the short day conditions do not produce stems but remain in a rosette stage the central bud and two or three large leaves were left. Of the leaves which remained upon the plant one was left during a long day, and one or two other leaves were placed under the conditions of a short 8-9 hour day; the long day and short day leaves were in different mutual positions and the sum effect of the leaves which obtained various photoperiods was counted according to the speed of the reproducing bud development. The experiments indicated that the retarding effect of the short day leaves of long day plants is considerably weaker than the effect of long day leaves of short day plants; that with a stem plant - mustard it is expressed more conspicuously than with plants of a rosette form; that the mutual distribution of short day leaves and long day leaves is important for a stem plant and is almost unimportant for rosette plants. Thus, in the nature of the bloom retarding effect of the leaves which were under the conditions of unfavorable light regime a cardinal difference between long day plants and short day plants was disclosed; the bloom retarding effect of short day leaves of long day plants appeared to be much weaker than the effect of short day plant leaves.

This difference, as it has been disclosed in further experiments, is related to the deep difference in the very nature of retarding substances. In the same manner as the experiments with the short day plant - perilla - we

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carried out experiments with the long day plant - pinewoods. Before the experiment, plants grew on a ten hour short day and, when large rosettes were formed, six leaves were left, one of which was left on a long day and five other leaves underwent the effect of a short eight hour day which has been achieved by means of light-impenetrable paper cases; with the experimenting plants these leaves were cut off and their petioles were placed into a 3 percent solution of sucrose. The injection of the sucrose solution through the pinewoods petioles was carried out until the end of the experiments, since their condition was good and they did not fall. The retarding effect of short day leaves of control plants was slight; the sprouting was delayed for six days in comparison with the plants without short day leaves. With the experimenting plants the solution of sucrose injected through the petioles of five leaves did not produce any retarding in the development of sprouts. Besides, with plants being injected with sugarrose the sprouting accelerated and the budding occurred two days earlier than within uninjected plants. These experiments proved that with long day plants the bloom retarding effect of short day leaves is related to the production of some other substances, not of sugar, in these leaves. Sugars, when in an excessive quantity, accelerate the blooming of long day plants.

In connection with this last conclusion we should recall the experiments of Volkov, carried out in the laboratory of Maksimov (1929), the seeds of late ripened species of oats Avena byzantina grew in 0,2-0,4 of normal solutions of sugarrose, and then has been sown in the soil - in pots or in boxes. A part of plants cultivated in such a manner formed panicles two-three days before the control plants, whereby with all experimenting plants the increase of the leaf surface and the increase of the dry weight became evident. Mel'khers and Lang (1942) in the experiments with henbane (Hyoscyanus niger) - long day plant - kept the rosette plants on a short day, close to the critical day length, and

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infiltrated sugar solution into the leaves. As the result of this infiltration the plants started the foundation of blooming, while the control plants without infiltration remained in the phase of the vegetative growth.

These experiments also indicate that sugars accelerate the blooming of long day plants.

THE INFLUENCE OF NITROGEN COMPOUNDS UPON PLANT BLOOMING

If in short day plants the substances which retard blooming are sugars, then which substances retard the blooming of long day plants; of, along with this, in the long day plants the substances which accelerate blooming are sugars, then which substances accelerate the blooming of short day plants? The answer to this question is furnished by new explorations on the influence of nitrogen solutions upon the blooming of plants.

In the domain of the influence of conditions of mineral food upon the blooming and the fruitbearing of plants there exists in agriculture the long established rule, according to which the increased nitrogen nourishment retards the phase of blooming and of maturing, while phosphor acidic feritilizers, on the contrary, accelerate plant maturing. In connection with the discovery of photoperiodism and the establishment of diametrically opposite reactions of blooming of short day and long day species, steps were undertaken in the elucidation of the influence of mineral, particularly nitrogen, food upon the blooming of species which belong to these two various ecological groups.

The first attempt in this direction was made by Borodina (1931), who, by applying the method of elimination of some elements from water solutions of food mixture, discovered that by eliminating potassium and phosphorus does not influence the formation of panicles in millet (short day plant) or the spiking of barley (long day plant); the elimination of nitrogen in barley accelerated the spiking of barley during a short and a long day, and with millet, according to the author herself, did not produce any definite result, although the given

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tables indicate some setback in the formation of panicles.

Already in the experiments of 1940 we discovered (1941) a relationship between the reaction of plants and the reaction of blooming upon the mineral nourishment; oats - the long day plant - eared and bloomed the earlier, the less it obtained elements of mineral food mixture; on the other hand, millet - the short day plant - started the formation of panicles the earlier the more mineral food elements were in the substrata. Simultaneously Denffer (Denffer, 1940) cultivating plants upon water plants at full nourishing mixture with the elimination of nitrogen discovered that the long day species - wheat, barley and "Iberis" - reacted upon the elimination of nitrogen by an acceleration of earing and of blooming, and the short day species - "mogar", chrysanthemum, "tinantsia" and "kalankhoe" - stopped in its blooming.

In further experiments (1942, 1943, 1945 a) the reaction of plant blooming upon the nitrogen nourishment was studied on many species, whereby plants usually grew under the conditions of a long and short day upon sand with food mixture in which, with equal amount of ash element, the number of nitrogen compound varied in both the direction of decreasing the specified norm up to 1/4 and even to complete absence, and in the increase up to two-three norms. As the result of these experiments carried out in 1941 and 1944 it has been clarified in the Institute of Plant Physiology of the Academy of Sciences of USSR in Moscow, and in 1942 and 1943 in the Agricultural Institute in Erevan' that oats, wheat, mustard, alfalfa and clover blossom earlier with lack of nitrogen, while millet, corn, perilla, chrysanthemum, sunflower, tobacco and cotton bloom sooner with normal supply of nitrogen or with its excess; finally, buckwheat, hemp, soy bean and kidney bean bloom simultaneously under various conditions of nitrogen food. Simultaneously the growth of plants, the accumulation of substances, the crops of fruit and of seeds in all experimenting

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vegetating species increase according to the increase of the amount of nitrogen compounds. Thus, with the availability of the general, natural to all vegetative species, reaction upon nitrogen food, as to the growth and plant crops, there exists a reaction in connection with the reproductive development - blooming which is manifested into various directions with various species.

This specification discloses also during a comparative analysis of individual factors obtained in the research of other authors. Ochter and Garlei (Auchter a. Harley, 1924) determined, that soy beans on a soil rich with nitrogen, and upon sand, poor with nitrogen, bloomed simultaneously, but pepper and lettuce, with low composition of nitrogen, were delayed in the blooming substrate. In the experiments of Naitingel (1927) the decorative sage (Salvia splendens), which usually blooms under the condition of photoperiods, bloomed during a long day with the limitation of nitrogen. Shapelle (Schapelle, 1936) discovered that the adding of nitrogen solution into pots with soil caused the delay in bloom of spinach and of radish which was later discovered by Kott (1940) in connection with another species of spinach. In the survey of Roberts and Ester Shtrukmeier (1938) on the influence of temperature upon the photoperiodical reaction of plants an experiment is mentioned in pots with soil and with sand, poor with nitrogen which indicates that with the same length of the day the plants of African marigold bloomed in soil and did not bloom in sand, but "klarkiia", lettuce and gernaium bloomed earlier in sand. Finally, in the survey of Edis Nidd (Neidle, 1939) was indicated that xanthium (Xanthium pennsylvanicum) bloomed the earlier, the richer the compound is with nitrogen.

The results of our experiments and of the experiments of other explorers indicated in this article enabled us to distribute vegetative species according to the reaction of their blooming upon the nitrogen into the following groups:

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I. Nitrogen negative which bloom faster with the entire elimination of nitrogen or with doses of nitrogen lower than normal and upon soil poor with nitrogen substances. To this group belong wheat (various species), barley (various species), oats, mustard, spinach, alfalfa, clover, "sal'viia," "klarkiia," gernaium and "iberis."

II. Nitrogen positive which bloom sooner under normal and higher doses of nitrogen and upon soil rich with nitrogen. To this group belong millet (various species), corn, "mogar", perilla, sunflower, tobacco, cotton (various species), pepper, lettuce, liupin, chrysanthemum (various species), velevetéen, "durnishnik", "tinantsiia", "kalankhoe".

III. Nitrogen neutral, which bloom simultaneously with various doses of nitrogen as well as upon soil both poor and rich with nitrogen. To this group belong buckwheat, hemp, soy bean (various species) and beans.

All these groups indicate that, despite the persisting assumption that the enrichment of food substrate by nitrogen salts checks the blooming and maturing of plants, in regard to nitrogen positive plants we should consider nitrogen food as a factor of bloom and fertility acceleration. With the assistance of this factor we may influence two basic processes which specify crops into a favorable direction - to accelerate blooming and the fertility of plants and simultaneously intensify the growth of plants and increase the seed crops. Therefore we suggested (1942) to make the following change into the existing rule in agriculture: Instead of "nitrogen acidic fertilizers with an excess of nitrogen delay individual phases in the development of plants" to accept "nitrogen fertilizers with the excess of nitrogen delay individual phases in development of some plants and, on the other hand, accelerate the development of others".

Let us dwell upon the basic problem in which relationship are the photoperiodic reaction and the reaction of plant blooming in the very same species

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with nitrogen which we shall call for simplification "the nitrogen phloral" reaction. Combining the data obtained according to "nitrogen phloral" reaction of 30 species and to the nature of their photoperiodical reaction we were able to determine on one hand the fact of prevailing conformity of nitrogen and photoperiodical groups (24 cases) and, on the other hand, the presence of slight deviation from this relation (6 cases). In order to elucidate the causes for these deviations, we (1945b), with the assistance of L. P.Zhdanova, carried out additional special experiments with 17 species mainly with agricultural plants. The results of these experiments indicated that all nitrogen negative plants are long day plants; the nitrogen negative plants of low level are both long and short day plants (the interjacent group), all the nitrogen positive plants of high capacity - the short day plants; finally, nitrogen neutral plants include both the short day and long day plants.

Note; For the confirmation of our data we may mention the article of Vsevolozhskaia (1946) in which the author comes to the conclusion based upon field and vegetation experiments concerning the application of high doses of nitrogen fertilization for "kenaf" and "dzhut" in order to obtain an earlier seed maturing and high crops.

All this indicates the conformity between nitrogen and photoperiodic groups. The availability of the interjacent group of nitrogen positive plants of low level, included in long and short day species, explains the deviations obtained before and emphasize the existance of transitory forms between typical nitrogen negative and nitrogen positive plants - a fact which manifested in relation to the division of species into photoperiodical groups.

Therefore the substances which retard the blooming of the long day plants are nitrogen solutions. These nitrogen solutions, when in surplus, accelerate the blooming of the short day plants.

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THE SIGNIFICANCE OF THE RELATIONSHIP BETWEEN SUGARS AND NITROGEN SOLUTIONS FOR THE BLOOMING OF PLANTS

After having summed up the research on the nature of substances which develop in leaves and which retard the blooming and on the influence of nitrogen solutions upon the blooming of plants, we arrive at the following conclusions: Sugars, when in surplus, hamper the blooming of short day plants, and, on the contrary, accelerate the blooming of long day plants; nitrogen solutions, when in surplus, retard the blooming of long day plants and, on the contrary, accelerate the blooming of short day plants. It is not difficult to see that we arrive again to the C/N proportion of sugars to nitrogen solutions which play such an outstanding role in Klebs' bloom theory, with that basic difference, that this C/N solution with the surplus of sugars over nitrogen solutions corresponds to the acceleration of blooming only of long day plants and acquires an adverse significance in short day plants. But then, may be Klebs is only partly correct and his theory might help in explaining the blooming of long day plants? Denffer (1940) shares this idea when at the end of his research he writes that the most correct approach to this problem would be the synthesis of Klebs and Saks hypotheses (Saks hypothesis of substances which produce flowers). Replying to this problem we must say: "No, Klebs is not entirely correct". And not only because there could be no two theories for the blooming of short and long day plants, but because some relationship between sugars and nitrogen solutions does not determine whether there will occur any blooming, but influences only the quantitative side of the process, its acceleration or retarding. The blooming of plants is determined by the blooming hormones which originate in plants under specific conditions of the light regime.

The influence of sugars and of nitrogen solutions, their correlation

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is manifested only in the case, if plants are under the conditions of a long day, when their blooming occurs either early or late. Thereby the length of the day is such an important factor in the generating development of plants that the effect, for instance, of nitrogen solutions manifests itself not in the case when plants are under conditions of the most optimal photoperiods and the process of plant blooming passes in a violent tempo, and then, when there are such long day conditions that the process of plant blooming retards.

Under the conditions of unfavorable photoperiods the most optimal combination of exterior factors which regulate the corresponding content of sugars and of nitrogen solutions is unable to cause the blooming of typical short and long day species. In experiments which we indicated in 1946 along with I. A. Tagmazian the typical short day species - perilla and kenaf - grew during the entire vegetation season in sand with some nourishing solution, which contains two norms of nitrogen acidic ammonium, under a feeble light under cheesecloth and did not indicate any signs of formating blooming organs, despite the fact that the content of carbon hydrate has been decreased this way, and the nitrogen solutions increased. The typical long day species - spinach and "rudbekiia" grew upon a weak nitrogen background (1/4 norms of nitrogen) and intense light, and also until the end of the season they remained in the phase of vegetative growth in the forms of rosettes despite the unfavorable relation of sugars to nitrogen solutions. In this last case there is one exception for grain which has been observed by Borodina (1931), Denffer (1940) and by ourselves (1945b); barley and wheat are able with the elimination of nitrogen, or with a small dose of it, under the conditions of a short day to overcome the effect of a short day and very slowly be in to ear and blossom.

Similar facts differently expressed served as the basis for explanation of plant bloom processes from the point of view of hormonal factors which originate under the conditions of specific photoperiods (1937).

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Where, then, is hidden the mistake of Klebs' experiments and observations which he explained so skillfully and which are the basis for his blooming theory? The solution of this problem will be reached if we turn to those vegetative species with which Klebs worked and to the conditions under which he carried out his experiments and observations. The greatest amount of experiments were carried out by Klebs with "molodil" (Sempervium Funkii), "lobelia" (Lobelia Erinus) "dubravka" (Veronica chamaedris), "budra" (Glehoma hederacea), forget-me-not (Myosotis palustris) and others. As the observations indicate (Taliev, 1935), all of them bloom in moderate altitudes during summer, from May to September, which indicates their belonging to long day or neutral plants. But as to some of the most important objects there are at the present time specific indications on the nature of their photoperiodical reaction. Thus, "lobelia" (Lobelia Erinus) with which Klebs observed metamorphosis of blooming organs into vegetative sprouts with the decrease of light intensity, according to the research of Funke (Funke, 1939), it is the long day species, but "kiprei" (Epilobium hirsutum), according to the experiments of Ross (Ross, 1942) is the typical long day plant. Forget-me-not (Myosotis scorpiodies), according to Ramaley (Ramaley, 1934) behaves like a typical long day plant; this is not the species with which Klebs worked (Myosotis palustris) but there exists a general regularity according to which in families presented by long day plants, short day species are very rare (Samygin, 1946).

Of special interest is "molodilo" (Sempervivum Funkii) - the central object of the Klebs' latest explorations. This species, as well as another species Sempervivum albidum taken under experiment, is the typical long day plant. This has been proved by Klebs himself (1918). Along with many other experiments he made the following experiment: Some rosette plants of these two species were cultivated during winter months in hothouses during a normally short day,

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others - with additional electrical exposure; the sprouting and blooming occurred only in the last case. If in this experiment, besides the two indicated species, some newcomer from the tropical or subtropical lands would take part, then, possibly, Klebs would reject his blooming theory, but would discover the photoperiodism of plants.

Limiting himself by flora representatives of moderate latitude, Klebs, of course, did not have among his specimens any short day species and therefore was unable to observe other reactions than the ones which he saw upon his basic objects, without mentioning the typical short day species which during a long summer day of moderate latitudes would remain in the vegetative phase and would not reach the blooming phase. Klebs cultivated plants mostly under the conditions of a regular summer long day at the latitude of the city of Iena where his laboratory was located; under these conditions of light regime all the plants in his experiments, being long day plants and neutral, bloomed soon or later. These were the plants and the conditions under which Klebs made his observations of the factors which promote the accumulation of sugars, accelerate the blooming of plants, and nitrogen solutions retard it. All these facts are still significant today, but they are explained differently in the light of those conceptions which we obtained by the theory of photoperiodism and by the theory of hormonal blooming.

We have already seen that the widely spread opinion on the theory and practice of applying nitrogen fertilizers which was the strongest argument in favor of Klebs' theory has lost its significance. In connection with Klebs' theory, the same explanation could be applied to the rule which has been confirmed in agriculture: the bases of scientific agriculture, especially the applications of nitrogen fertilizers, formed in moderate and Northern latitudes under the conditions of a long summer day and on plants which, according to their physiological nature, belong to the group of long day or neutral species.

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As far as the entire experimental material upon which Klebs blooming theory is based, came under a new light, we may consider the road of refuting this theory as coming to an end.

By solving the problem of refuting Klebs' theory we are facing a new problem: why the very same substances within some species stimulate the acceleration of blooming, and within others, on the other hand, retard the blooming; why within the long day species the increase of the proportion in the composition of hydrocarbon to nitrogen solutions accelerates blooming, and with short day species - the decrease of this proportion? No doubt, only the further detailed physiological and biochemical study of this phenomenon is able to answer this question, whereby the success of a similar kind of research depends to a considerable degree on the elucidation of the nature of the phlorogenic substances - the blooming hormones which cause plant blooming.

But the general biological explanation of this phenomenon could be already mentioned here if we use the historical method which occupies an important place in biology. In a series of surveys on photoperiodism, starting with the works of Liubimenko and Shcheglova (1927), Doroshenko and Kazumova (1927, 1929), Konstantinov (1934), Allard (Allard, 1932) and other explorers, they came to a conclusion that the nature of a photoperiodical reaction of species depends upon their geographical origin and their location; the species which originate from low latitudes, equatorial and tropical countries behave like long day plants. It became clear that among the environmental factors which determine the evolution of vegetating organisms, the shift of day and night plays an important role, that the photoperiodical reaction itself is the adapting quality of plants to the conditions of existence. Thereby the species and families of plants well adapted, neutral to a long day, but poorly adapted to photoperiods which vary within the limits counted in minutes, were disclosed.

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These explorations furnish the possibility of considering the photoperiodic phenomenon from evolutionary point of view. The vegetation of tropical and subtropical countries, where the duration of twenty four hours sunshine is dominating, consists of short day and neutral species. Here were also the nests of origin of higher plants, because, according to a widely developed opinion of Irmsher (Irmscher, 1922) supported by Vul'f in his "Historical geography of plants" (1944), the angiosperms originated in the tropical zone and spread from there towards the South and the North into the moderate zones. The availability of neutral and short day species in the tropical zone indicates that, along with the tropical species which do not limit themselves in their sexual development by a narrow adaptation of definite boundaries of light regime (Neutral), later appeared some species which worked out an adaptation to a short day of this zone and which combine the ability of blooming and fruit bearing under short light cycles of their location (short day plants). Naturally, between these types existed and exist varied transitory forms.

The neutral forms which moved and spread in the boundaries of moderate zones of Northern and Southern hemispheres were clearing their way towards the North and the South. A continuous growth of these plants in these latitudes placed a secular imprint upon them, and many species in their sexual development worked out an adaptation to the long day of the moderate zones, whereby they went so far that they lost their capacity of sexual development under the conditions of a short day and thereby they lost their capacity of returning to previous tropical regions.

This genesis of one kind of organical forms from other kinds occurred and is still occurring under those conditions of environment under which vegetation forms either reside or penetrate. The environment imprints first of all biochemical and physiological qualities of vegetating species and then upon their morphological transformations. This indicates that parallel with the form

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evolution occurred and still occurs the evolution of biochemical symptoms. The problem of evolution of biochemical symptoms received already an elucidation in the wide research of Ivanov (1937) on the change of oils and other compounds, of Blagoveshchenskii (1935, 1945) on the change of alkaloids and fermentations, like, for instance, the energy transformators of Mak-Ner (McNair, 1935) on the composition of alkoloides, glycerides and on evaporating oils with representatives of various families, and recently this problem has been discussed in a wide outline of Rozanova (1946). The exchange of carbonhydrates and of nitrogen solutions in the vegetating tissues of various ecological species should also be regarded as an innar symptom which develops along with the general evolution of vegetating species.

Short days and long periods of high temperature of tropical and subtropical countries created conditions under which the adaptation of short day plants to the reproductive development went, on one hand, along the line of maximal utilization of mineral substances, including the nitrogen solutions; on the other hand, a relatively smaller amount of carbonhydrates - sugars in the plants, on account of the limited length of the sunny day, accumulated.

Long days and short periods of high temperature of moderate and Northern latitudes created conditions under which the adaption of long day species to the reproductive development and selection of species were running along the line of the fastest, and, consequently, relatively shorter or minimal utilisation of mineral and nitrogen substances and during the predominance of carbohydrates-sugars which are produced under the conditions of a long day. In this comparison of the physiology of such various ecotypes of long and short day species we find the explanation why the predominance of nitrogen solutions over sugars stimulates plant blooming, but the plant blooming of a long day is stimulated by the predominance of sugars over nitrogen solutions; this is an

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historically formed substance exchange with which is connected the origin and the effect of the hormonal factors which determine the process of plant blooming.

Under the light of these conceptions which we obtain by the historical method and based upon those experimental data which are indicated in previous chapters, it is time for us to recall the following famous words of Klod Bernar concerning the blooming theory of Flebs: "When the discovered facts do not correspond to the predominating theory, we should accept the facts but reject the theory, although the latter was supported by great names and was generally accepted".

AMF August 23, 1951.

End of Article.

Note: Two-page list of literature not translated; photoprint attached to ribbon copy.

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